# **AUTHOR INDEX**

Ā

Aach, H. G., 32 Aamodt, E., 418 Aaronson, S., 37, 39, 50, Aasmundrud, O., 74 Abbott, D. L., 189, 190, 200, 320 Abe, M., 153, 155 Abraham, A., 40 Abraham, R. G., 59, 60 Abrahams, M. D., 445 Accorinti, J., 46 Adams, I., 48 Addicot, F. T., 262 Addoms, R. M., 304 Afridi, M. M. R. K., 59 Afzelius, B. M., 256 Agurell, S., 143-68; 156, 157, 161 Ahlström, L., 257 Ahmadjian, V., 45 Aichele, F., 185, 196 Ajl, S., 39, 40 Akamine, E. K., 411, 412, 415, 418, 420, 430 Akoyunoglou, G., 113 Albert, L. S., 248 Albertsson, P.-A., 9 Aldrich, D. V., 41 Aldrich, W. W., 304 Aleksandrov, V. Ya., 368 Alekseev, A. M., 364, 374 Alexander, M., 31 Alexander, W. P., 420 Al-Hafidh, M., 118 Ali-Zade, M. A., 203 Allard, H. A., 206 Allaway, W. H., 426 Allen, M. B., 40, 44, 46, 65, 66, 67, 82, 134, 454 Alleweldt, G., 204, 206 Allfrey, V. G., 28, 31 Allison, L. E., 423 Allsopp, A., 225-54; 230, 242, 244, 245, 246, 247, 248, 249 248, 249 Altergot, V. F., 368, 371 Amesz, J., 78, 79, 81, 84, 88, 453, 454, 455 Amici, J. B., 261 Anacker, W. F., 59 Andersen, E. T., 174 Anderson, I. C., 73, 74, Anderson, K. A., 45 Anderson, M. L., 335, 337 Anderson, R. C., 149

Andreeva, T. F., 65 Andrejeva, I., 373 Andronesco, D. I., 259 Andrus, C. F., 172 Anikiev, V. V., 375 Anthony, S., 259, 260 Antkiev, V. V., 256 Antles, L. C., 260 Anwar, R. A., 151 App, A. A., 50 Applegate, H. G., 204 Ar'ar, Abdullah, 423 Arcamone, F., 153 Arcamone, F., 153 Ariyasu, T., 262 Army, T. J., 423 Arnold, W., 75 Arnon, D. I., 66, 67, 78, 79, 80, 81, 82, 85, 86, 87, 89, 92, 93, 134 Arnstein, H. R. V., 42 Aronoff, S., 6, 27, 150 Aronson, J. M., 335 Artman, M., 59 Arwidsson, B., 86 Asada, K., 132 Asahira, T., 203 Asakawa, S., 208 Asbeck, F., 257 Ash, O. K., 78, 79, 80, 83, 85, 88, 94 Ashby, E., 242, 243, 246 Ashby, W. C., 203 Ashton, W. M., 174 Ashworth, P. R., 425 Askenasy, E., 189, 191, 237 Aslanow, H., 145, 149 Atkinson, D. E., 59, 61, 64 Atterberg, A., 189 Audia, W. V., 203, 204 Audus, L. J., 247, 303, 309 Augsten, H., 203 Augustin, R., 258 Aulitzky, H., 347, 348 Averbach, B. C., 59, 60 Awada, M., 419

В

Ayers, A. D., 178, 423,

424, 425, 426

Baar, H., 189, 193, 198 Bacchawat, B. K., 40 Bacon, J. S. D., 122, 124 Badanova, K. A., 364, 370 Baebler, S., 446 Bailey, J. L., 136 Bailey, L. F., 208
Bailey, S. D., 449
Bain, J. M., 304
Bair, R. A., 420 Baker, D. R., 149, 159 Baker, G. A., 305 Baker, H., 37, 43, 52 Baker, J. E., 43, 59, 62, 466 Baker, K. T., 409, 410 Baker, R. E., 305 Bal, A. K., 3, 31 Baldauf, M. P., 413 Baldwin, R. L., 135, 136 Bales, H. E., 79 Ball, C. D., 146, 147 Ball, E., 228, 229, 230, 231, 232 Ballard, L. A. T., 329 Baltscheffsky, H., 9, 84, 86, 92, 94, 95 Baltscheffsky, M., 84, 86, 89, 92, 94, 95 Baluch, M. A., 174 Bangdiwala, S., 432 Barber, G. A., 125, 133, 134 Barber, S. A., 179, 429 Barclay, P. C., 176, 179 Bard, S., 337 Barer, R., 453 Barger, G. L., 414 Barker, G. R., 19, 24 Barker, W. G., 249 Barnett, H. L., 329 Barrat, R. W., 327, 331 Barrett, R. E., 446 Barry, S.-N., 50 Barskaya, E. I., 214, 358 Bartholomew, E. T., 176, 367 Bartnicki-Garcia, S., 327-44; 329, 330, 331, 340 Barton, A. A., 333 Barton, D. H. R., 158, 159, 161 Barton, L. V., 185, 190, 196, 201, 202, 203, 208, 211 Barton, N. L., 423 Bartsch, R. G., 94 Baruak, H. K., 261 Basnin, S. A., 447 Bassham, J. A., 101-20; 101, 102, 103, 105, 106, 107, 108, 109, 110, 111, 112, 115, 116, 117, 118, 128, 130 Bates, R. P., 414

Bathurst, N. O., 258 Batjer, L. P., 174, 284, Battersby, A. R., 143, 144, 145, 146, 151, 152, 158, 159, 161 Baumgartner, A., 347 Baur, E., 186 Bavley, A., 447 Baxter, R. M., 144, 153, 156, 157 Bayley, S. T., 32, 334 Bazinet, M. L., 449 Beadle, G. W., 169, 170, Bean, R. C., 317 Beattie, J. M., 413, 428, 429, 432, 434 Beatus, R., 263 Beaufils, E., 431 Becking, J. H., 59 Beckman, H. O., 463 Beer, M., 334 Beer, R., 256 Beevers, H., 39, 124, 128 Beinhart, G., 415 Bell, V. M., 146 Bell, W. D., 172 Bellamy, W. D., 9 Bellartz, S., 258 Belser, W. L., 42 Belcher, J. H., 46 Belsky, M. M., 50 Bendall, D. S., 330 Bandall, F., 389 Bender, R. W., 464 Bendix, S., 40 Benishek, B. J., 391 Bennet-Clark, T. A., 316 Bennett, J. P., 191, 196 Benoni, H., 263 Bensky, B., 39, 50 Bensky, E., 39, 50
Benson, A. A., 1-16; 2, 6, 9, 10, 11, 101, 102, 103, 107, 108, 109, 110, 112, 115, 116, 133, 455
Benson, N. R., 434
Bentley, J. A., 272, 303, 307, 317
Bentley, K. W. 146, 150 Bentley, K. W., 146, 159 Berger, E. Y., 397 Berger Landefeldt, U., 350 Bergeron, J. A., 74, 75 Bergh, J. P. v. d., 259 Bergmann, F., 281 Bernard, F., 47 Bernheim, F., 59 Bernstein, L., 178, 424, 425 Berry, R. C., 446, 447 Berry, W., 428 Beyers, C. J., 428 Bhatia, I. S., 443, 444 Bhattacharji, S., 157 Bhattacharyya, N. G., 174 Bhattacharyya, P. K., 329 Bhide, S. V., 17

Biale, J. B., 448 Bidwell, R. G. S., 51 Bieble, R., 364, 367, 368 Bilinski, E. C., 147, 150, 155 Billings, W. D., 169, 350, 354, 355, 357, 358, 359 Binks, R., 144, 151, 152, 159, 161 159, 161 Birch, A. J., 155, 157 Bird, I. F., 445 Birdsey, E. C., 43 Birnstiel, M. L., 446 Birth, G. S., 464 Bischoff, H. W., 37 Biswas, B. B., 20 Biörkman, E. 350 Biswas, L., 350 Björkman, E., 350 I. N., 412 350 Black, J. N., 412 Black, M., 185, 199, 202, 203, 204, 205, 208 Black, M. W., 191 Blackman, G. E., 412 Blagoveshchenskij, A. V., 208 Blair, G. Y., 177, 418 Blake, M. A., 304 Blaser, H. W., 248 Bliss, L. C., 350, 358 Block, K., 12 Block, K., 156 Block, R. J., 52 Blommaert, K. L. J., 203, 208 Blondeau, R., 3, 305, 306, 312 Blum, J. J., 40 Boalch, G. T., 51 Boawn, L. C., 175 Bohrysheya Bobrysheva, A. M., 214 Bock, K. W., 116 Bock, R. M., 68 Bocks, S. M., 39, 124 Bodo, G., 287 Boeckh-Behrens, G., 151 Bogan, R. H., 398 Bogen, H. J., 367 Bogorad, L., 172 Bohlmann, F., 149 Böhmer, K., 198 Boit, H.-G., 156 Boke, N. H., 228 Bokuchava, M. A., 444 Bolas, B. D., 177 Bold, H. C., 45 Bollard, E. G., 147, 316 Bolton, J., 434 Bongers, L. H. J., 62, 65 Bonner, W. D., 466 Bonner, J., 20, 27, 28, 29, 30, 31, 32, 101, 203, 425, 446 Bonner, J. T., 337 Bonnier, G., 345 Bordbar, M. A., 423 Borer, R., 331 Boresch, K., 213 Borghi, R., 203

Born, W. H., 202 Borris, H., 262 Borris, H., 187, 189 Borriss, H., 187, 189 Borthwick, H. A., 185, 198, 200, 205, 206, 208 Bose, S. K., 82, 85, 87, 91 Bostrack, J. M., 248 Boswell, S. B., 312 Bothner-By, A. A., 147 Bottomley, W., 316 Bouat, A., 174 Boulanger, P., 147 Bould, C., 428 Bourdeau, P. F., 356 Bourdon, J., 109, 112, 119 Bourget, S. J., 421 Bourelly, P., 37 Bouyoucos, G. J., 421, 416 Bovee, H. H., 391 Bowden, V., 149 Bower, C. A., 423 Bower, F. O., 226, 229 Bowes, B. G., 237 Bowman, N. J., 388 Bowman, R. O., 37 Boysen Jensen, P., Braarud, T., 38, 47 Brachet, J., 17, 18 Brack, A., 153, 155, 156, 157 Bracket, F. S., 453 Bradbeer, J. W., 128, 215 Bradley, M. V., 306, 307, 308, 313, 316, 319, 321 Bradshaw, A. D., 180 Brandenberger, H., 443, 444 Brandes, E. W., 410 Brandt, D. C., 453, 454, 455 Branscheid, P., 261 Braverman, M. H., 329 Brawerman, G., 32 Bredemann, G., 260 Brefeld, O., 330 Bretz, C. F., 281, 283, 295, 297 Breuer, S. W., 144, 152, 161 Brewbaker, J. L., 262, 265 Brewer, J. W., 387, 391, 392, 393, 394, 398, 404, 405 Brian, P. W., 203, 204, 303, 436 Brieger, F., 255 Brierley, G., 5, 10 Briggs, L. J., 422 Briggs, W. R., 247 Brill, C., 74 Brill, W. J., 64, 67 Brink, R. A., 242, 250, 263 Britt, O. K., 246, 248

Brock, T. D., 336

Brodführer, U., 359 Broeshart, H., 428 Bröker, W., 180 Bronsweig, R. D., 337 Brooks, R. M., 305, 306 Brown, A. H., 137, 138 389 Brown, C. L., 236 Brown, D. C., 191 Brown, D. M., 412 Brown, D. S., 203 Brown, H. B., 444 Brown, H. T., 414 Brown, J. C., 37, 169, 172, 176, 178, 434 Brown, J. G., 305 Brown, J. M. A., 330 Brown, O. D., 401, 402, 406 Brown, R., 330 Brown, R. M., 37 Brown, S. A., 146 Brown, S. W., 245, 255 Brown, T. E., 130, 397 Brown, W. V., 243 Brubaker, F., 259 Brühmüller, M., 337 Brummond, D. O., 112 Brummond, D. O., 112
Brunner, R., 153, 155
Brunstetter, B. C., 318
Bryant, J. C., 421
Bubar, J. S., 263
Buch, M. L., 121, 208
Buchanan, B. B., 81, 93
Bücker, W., 62, 64
Buetow, D. E., 40, 50
Bukhari, P. D. 367, 367 Bukharin, P. D., 367, 368, Bukovac, M. J., 203, 285, 290, 309, 311, 312 Bullwinkel, B., 247 Bünning, E., 185, 225, 259, 263 Bunt, J. S., 47 Burck, W., 261 Buretz, K. M., 171 Burger, R. M., 40 Burkhart, L., 174 Burkholder, P. R., 46 Burkina, Z. S., 365 Burnett, R. H., 310, 312 Burnett, R. H., 519, 512 Burns, R. M., 312 Burr, G. O., 429 Burrell, R. C., 58 Burris, R. H., 57, 66, 445 Bursa, A. S., 38 Bursa, A. S., 38 Burström, H., 57, 65, 177 Burton, W. W., 446, 447 Butler, G. W., 176, 179 Butler, W., 8 Butler, P. F., 414 Butler, W. L., 451-70; 451, 456, 458, 459, 461, 462, 442, 465, 466, 467, 468 424, 465, 466, 467, 468 Butt, V. S., 134 Buttler, W. L., 200 Buvat, R., 227, 228, 230

Byerrum, R. U., 129, 145, 146, 147, 148, 149, 150, 151
Byrde, R. J. W., 447

C

Caltrider, P. G., 340 Calvin, M., 101, 102, 103, 107, 110, 112, 113, 116, 117, 127, 455 Camefort, H., 227, 228 Cramer, M., 65 Camp. M. v., 255 Campbell, J. A., 191, 196 Campbell, J. I., 410 Campbell, J. M., 112, 113 Campbell, R. B., 418, 419, 422 Campbell, R. C., 309, 310, 312, 313, 320 Camus, G., 232 Candela, M. I., 59 Cantino, E. C., 327, 329, 330, 338, 339, 340 Capindale, J. B., 127 Caplin, S. M., 315 Capo, B. G., 426, 427, 432 Caponetti, J. D., 240 Carlson, R. F., 202, 207 Carnahan, J. E., 43, 64, 81, 93 Carpenter, W. D., 124 Carr, D. J., 185, 314 Carr, R. H., 174 Cartellieri, E., 350, 351, 352, 354, 357 Cartwright, R. A., 444 Cary, H. H., 463 Casperson, G., 348 Cassie, V., 42 Castle, J. E., 43 Cathey, H. M., 271-302; 202, 204, 272, 277, 278, 279, 280, 281, 283, 284, 286, 287, 288, 290, 291, 292, 293, 294, 295, 297, 303, 309 Cederstrand, C., 389 Čeljadinova (Chelyadinova), A. I., 194 Chailakhian, M. K., 249 Chain, E. G., 153 Chalmers, R. V., 389 Champagnat, P., 185, 211, 247 Chance, B., 451, 463, 464, 465 Chandler, C., 202 Chandler, W. H., 191, 320 Chang, Jen-Hu, 422 Chapman, A., 5 Chapman, J. A., 3 Chapman, D. D., 398 Chapman, G. B., 334 Chapman, G. W., 431

Chapman, H. D., 428 Chapman, H. W., 414 Chapman, L. J., 412 Chance, B., 76, 77, 79, 81, 86, 87, 90, 92 Chantrenne, H., 19 Chapelle, E. W., 44 Chappelle, E. W., 137 Chargaff, E., 32 Charley, P., 4 Charney, E., 453 Charoampous, F., 331 Chaudhri, I. I., 199 Chen, J. C. W., 335 Chenery, E. M., 174 Cheniae, G. M., 1 Cherry, J. H., 23 Chiba, Y., 41 11 Chibnall, A. C., 44 Chin, B., 330, 337 Chiquoine, A. D., 337 Chiriboga, J., 137 Chonan, N., 279, 282, 283, 293, 295 Chouteau, J., 445 Chowdhuri, N., 39, 40 Christ, B., 263 Christman, D. R., 149 Christophersen, J., 259, 260 Chubarovskaja, A. E., 200 Chung, C. W., 330, 332 Chak, A., 155 Cirino, V. O., 174 Clair, R. W., 415 Clark, H. E., 430 Clarke, A. J., 147, 148, 149, 155 Clarke, B., 202 Clarke, I. D., 330 Clarkson, B. D., 42 Clausen, J., 169, 180, 357 Clayton, R. A., 446 Clayton, R. K., 73, 74, 75, 77, 79, 84, 92 Clebsch, E. E. C., 355 Clegg, J. S., 340 Clements, H. F., 409-42; 410, 411, 412, 415, 416, 417, 418, 419, 420, 425, 426, 428, 429, 430, 432, 435 Clowes, F. A. L., 18, 226, 228, 231, 233, 236, 241 Cochrane, V. W., 329, 336 Coggins, C. W., Jr., 310, 312 Cohen, G. N., 169 Cohen, T., 158, 159 Cohen-Bazire, G., 73, 89 Coic, Y., 174 Coleman, J. W., 467 Collier, J. W., 410 Colman, B., 215 Colmano, G., 9

Colvin, J. R., 334 Comandon, J., 333 Comandon, J., 333 Commoner, B., 31 Coniglio, J. G., 11 Conners, C. H., 305 Conrad, H. M., 280, 295 Conrad, K., 24 Conrad, S. M., 44 Conshaw, J., 334 Contl, S. F., 73, 74, 83, 89, 90 Conl B. J., 414, 428, 44 Cooil, B. J., 414, 428, 434 Cook, B. B., 400 Coombe, B. G., 305, 307, Cooper, B., 389 Cooper, D. C., 255 Cooper, W. C., 203, 204, 209, 261 Coppenet, M., 174 Corcoran, M. R., 314 Cord, J. M., 387 Corey, R. R., 40 Cornelison, A. H., 419 Cornforth, J. W., 155, 156, Corns, W. G., 202 Cost, K., 83 Costello, R. L., 59 Coulter, J. K., 428, 429, Cove, D. J., 59 Cowles, H. C., 409 Cox, D. C., 422 Crafts, A. S., 319 Crane, F. A., 249 Crane, J. C., 303-26; 305, 306, 307, 308, 309, 310, 312, 313, 314, 316, 320, 321 Crawford, C. L., 175, 304 Crayton, F., 447 Crespi, H. L., 44, 333 Cresswell, C. F., 59, 61, 66. 68 Crocker, W., 185, 189, 190, 193, 196, 197, 211, 212 Crombie, W. M., 11, 12 Cromwell, B. T., 147 Cronshaw, J., 400 Crotty, W. J., 245 Cucullu, A. F., 174 Cullinan, S. J., 174 Cuming, B. G., 193, 195 Cusick, F., 249 Cutter, E. G., 228, 229, 236, 238, 239, 240, 241, 244 Cutter, V. M., 327, 331 Czapek, F., 256 Czygan, F. C., 59, 60, 61, 62, 67, 68

D

Daboll, H. F., 44 Dahl, A. O., 256

Dahlgren, G., 273 Dalal, F. R., 42 Daletskaya, T. V., 202, 208 D'ámado, A. F., 149 Damaschke, K., 64 Damaschke, K., 64
Daniel, L., 261, 262
Danielli, J. F., 1, 3
Daniels, J., 410
Danielson, R. E., 423
Danioly, M. D., 189
Daoud, H. S., 243
Darrow, G. M., 306
Das, U. K., 420
Davidson, E. H., 31
Davidson, F. M., 10
Davidson, H., 203, 288 Davidson, H., 203, 285, 290 Davidson, O. W., 200 Davies, D. D., 121, 129 Davis, E. A., 65, 67 Davis, F. E., 420 Davis, J. T., 11 Davis, L. D., 305 Davis, R. V., 247 Davis, W. E., 196, 197, 198, 211, 213 Davison, R. M., 309, 312, 316 Davson, H., 1, 3 Dawson, R. F., 146, 147, 149, 150 De, D. N., 3 Deason, T. R., 43 Debuch, H., 11 Decker, J. P., 138, 414 De Fonbrune, P., 333 da Fonseca-Wollheim, F., 116 De Gier, J., 74 de Haas, P. G., 189, 190 de Heredia, C. F., 59 De Kloet, S. R., 28 DeKock, P. C., 22, 123, 124 De la Burde, R., 447 de la Haba, G., 68 Delavan, L. A., 133 DelCampo, F. F., 65, 66, Delwiche, C. C., 62 Deneke, H., 348 Denna, D. W., 279, 287 Denne, M. P., 228 Dennis, F. G., Jr., 209, 210, 309, 312 Denny, F. E., 202 Denward, T., 266 Dessureaux, L., 174 De Terra, N., 328, 331 DeTurk, E. E., 174 DeTurk, W. E., 59 de Villers, J., 428 De Waard, A., 156 Dewan, M. L., 423 Dewey, D. R., 178 Dewey, L. J., 146, 147 Diaper, D. G. M., 145, 147 Dias, E. P., 435

Diller, V. M., 59
Dintzis, H., 32
Diotanis, H., 32
Diotone, L. A., 202
Dolan, T., 127
Doman, N. G., 113
Donahue, B., 435
Donoho, C. W., 202, 203
Doorenbos, J., 185, 242, 246
d'Ornano, L., 59, 64
Dorner, R. W., 446
Dorrestein, R., 74, 75, 88
Douglas, T., 19, 24
Downing, C. R., 278
Downs, R. J., 185, 205, 206, 208, 280, 283, 293, 295
Doy, C. H., 152
Drake, J. W., 329
Dreibelbis, F. R., 421
Drever, H., 2
Droop, M. R., 37, 44, 51
Drouet, F., 38, 47
Drouhet, E., 330
Dubeck, M., 147, 158
Ducet, G., 121, 445
Duddington, C. L., 333
Dudley, J. W., 177
Duffield, J. W., 260
Dulac, J., 174
Duntley, S. Q., 457
Durrell, L. W., 329
Duysens, L. N. M., 75, 76, 79, 81, 451, 453, 454, 455, 466
Dvorák, B., 248
Dye, W. T., Jr., 278

E

Eagle, H. E., 424
Eagles, C. F., 208, 210
Ealy, R. P., 290
Eames, A. J., 237
East, E. M., 263, 264
Eaton, F. M., 177
Ebersold, W. T., 40
Echols, R. M., 261
Eckerson, S., 212
Edgerton, L. J., 209, 210, 309, 312
Edmonston, F., 109, 115
Edwards, G. A., 330
Edwards, P. N., 158
Edwards, P. St. J., 245
Egami, F., 63, 68
Egeter, H., 109, 115
Eggman, L., 112, 113
Egli, R. H., 443, 445
Ehlers, H., 261, 262
Ehlig, C. F., 177
Eimhjellen, K. E., 74
Eklundh Ehrenberg, C., 260
Ellis, R. J., 125
Elrick, D. E., 421
Elzam, O. E., 179

Embleton, T. W., 177 Emerson, R., 329, 389 Emerson, R. L., 82, 87 Emmert, F. H., 431 Eng, T. L., 391 Engelberg, N., 19, 20 Engelbrecht, L., 24, 25, 26, 318, 372 England, D. J. F., 337 Eppley, R. W., 37, 41, 42, Epstein, E., 169-84; 4, 169, 179, 425 Epstein, S. S., 43 Erben, K., 328, 336 Erdtman, G., 256 Erge, D., 153 Ernest, J. V., 464 Erwin, J., 12 Esashi, Y., 199 Esau, K., 231, 232, 233 Escombe, F., 414 Esser, K., 262, 264 Essery, J. M., 144, 151 Estabrook, R. W., 466 Eubanks, C. A. H., 453, 455 Euler, H. v., 257 Evans, A. M., 265 Evans, H., 428, 429, 434, 435, 436 Evans, H. J., 57, 58, 59, 65, 123, 127 Evans, W. R., 40 Evenari, M., 185, 197, 198, 199, 200, 202, 203, 208, 272, 281 Everson, E. H., 208 Evreinova, T., 372 Ewart, G., 419 Ewer, R. F., 244 Eyster, C., 130, 397

Faegri, K., 256 Fährrich, P., 261 Fährenholtz, H., 243 Falcone, G., 329, 332, 333 Fales, H. M., 144, 158, 161 Fan, C. S., 65 Farkas, G. L., 243 Farkas-Himsley, H., 59 Farnham, R. B., 423 Fawcett, C. H., 272 Fay, P., 47 Feeley, J., 24 Fejer, D., 136 Feldman, N. L., 368 Felius, P. M., 202 Felton, S. L., 278 Ferenczy, L., 208 Fernandes-Moran, H., 256 Ferrari, R. A., 6, 10, 11 Ferretti, A., 153 Ferrier, R. J., 113

Ferwerda, J. D., 415, 428, 438 Fewson, C. A., 58, 60, 118 Fichtengolz, S. S., 366 Fielding, A. H., 447 Filosa, M. F., 340 Finn, J. C., 401, 402, 406 Firbas, H., 259, 261 Fireman, M., 423 Fischer, A. G., 145, 152 Fischer, H., 347 Fischer, R., 153, 157 Fischnich, O., 202, 203 Fisher, D. J., 59 Fisher, E. G., 59 Fisher, F. J. F., 248 Fisk, E., 228 Flavin, M., 150 Fleischer, S., 5, 10 Fleischer, B., 5 Flemion, F., 200, 202, 203 Flesher, D., 59 Fletcher, D. W., 332 Florkin, M., 170 Floss, H.-G., 150, 153, Floss, H.-G., 190, 153, 155, 157, 161
Flux, D. S., 176
Foda, H. A., 208
Fodor, G., 144, 159
Fogg, G. E., 39, 40, 42, 46, 47, 66 Fogle, H. W., 202 Fonina, O. J., 194 Fornasari, E., 94 Forrester, M., 139 Forsyth, F. R., 24 Forsyth, W. G. C., 443-50; 444, 445, 448 Fort, C. A., 174 Foster, A. S., 227, 228 Foster, J. V., 155 Fott, B., 37, 42, 44, 52 Fox, J. E., 316 Fox, R. L., 425 Foy, C. D., 179 Francombe, W. H., 333 Frank, H., 246, 333 Frank, J. R., 288 Frank, O., 37, 43, 52 Frankenburg, W. G., 445, 446, 447 Frankland, B., 202, 204 Frank-Tishel, J., 21 Frear, D. S., 58 Frei, E., 334, 335 Frei, Y. F., 466 Freifelder, D., 331 French, C. S., 76, 78, 79, 415, 460, 466 Frenkel, A. W., 73, 78, 79, 83, 86, 88 Frenzel, B., 347 Freytag, K., 257 Frey-Wyssling, A., 1, 2, 6, 8, 335, 446 Friedel, H., 349 Friedman, A. R., 150

Friend, J., 136 Fries, L., 51 Fries, S. L., 281 Fruton, J. S., 281 Fuchs, W. H., 190 Fujii, R., 17, 22, 24 Fujimura, T., 304, 305 Fujita, N., 444 Fujita, Y., 46
Fukasawa, H., 258
Fukumoto, S., 199
Fullord, M., 59
Fuller, R. C., 73, 74, 75, 83, 89, 90, 331 Fullmer, F., 428, 429, 430 Fulton, J. D., 390, 391 Funk, H. B., 42 Furth, J. J., 31

Gabelman, W. H., 174 Gadre, K. M., 414 Gafford, R. D., 390, 391 Gaines, G. L., Jr., 9 Galand, P., 19, 23 Galloway, R. A., 44 Gally, J., 295 Galmiche, J. M., 113, 124 Galston, A. W., 22 Gamborg, O. L., 133 Gaponenko, V. I., 8 Garb, D. L., 272, 281 Garber, K., 260 Garber, M. J., 177, 310, 312 Gard, K. R., 410 Gardner, W. A., 198, 212 Gardner, W. R., 414, 425 Garey, W., 425 Garman, H. R., 201 Garner, W. W., 206 Garrison, R., 227, 238, 248 Garrod, A. E., 169 Gärtel, W., 261 Garzuly-Janke, R., 331 Gassner, G., 186, 189, 198, 201 Gates, C. T., 20 Gauch, H. G., 418 Gäumann, E., 212, 352 Gaur, B. K., 320 Gear, J. R., 145, 151, 152 Gee, H. K., 387, 391, 392, 393, 394, 396, 398, 404, 405 Gee, R., 127 Geiger, R., 346, 347, 414 Geisler, G., 329 Geissman, T. A., 443, 444, 448 Geller, D. M., 73, 83, 86, 90, 91 George, A. G., 428 Gerhart, J. C., 329

Gerloff, G. C., 43, 169, 170 Gest, H., 73, 78, 82, 83, 85, 87, 90, 91, 93 Ghosh, A., 331 Ghosh, N. R., 51 Gibbs, M., 108, 118, 124 Gibbs, S. P., 52 Gibson, F., 152 Gibson, M. J., 152 Gifford, E. M., 226, 227, 228, 249 Gill, D. L., 272, 280, 284 Gillham, N. W., 40 Giovanelli, J., 150 Giraud, G., 5 Glagoleva, T. A., 354, 357 Gleason, L. S., 414 Glenday, A. C., 176, 179 Glück, H., 194 Godnev, T. N., 355 Goebel, K., 194, 205, 242, 244 Goedheer, J. C., 8, 75 Goff, E. S., 260 Gohlke, A. F., 288 Gokhale, N. G., 174 Gold, K., 38, 141 Goldacre, P. L., 316 Goldberg, M. L., 128 Goldschmidt-Blumenthal, S., 208 Goldsmith, G. W., 352 Goldstein, A., 339 Golubinskij, I. N., 262 Golueke, C. G., 387-408; 387, 391, 392, 393, 394, 395, 396, 398, 404, 405 Golumbic, C., 464 Gomes, F. P., 428 Gomez, A. F., 428 Goo, M., 202 Good, N. E., 138 Goodall, D. W., 174 Goodeve, A. M., 153 Goodman, D. W. S., 156 Gorczynski, T., 256 Gorham, P. R., 46 Goroscenko, E. N., 256 Gorsline, G. W., 174 Goss, J. A., 202 Gotaas, H. B., 396 Goto, Y., 33 Gottlieb, D., 340 Gotto, A. M., 134 Gottscho, A. M., 446, 447 Gould, J., 47 Goutarel, R., 153 Gowans, C. S., 40 Gowing, D. P., 273, 277, 285 Graham, D., 124 Graham, J.-R., 393, 395 Graham, J. S. D., 124, 262 Grahl, A., 202 Gray, H. M., 431 Gray, R. A., 202 Grebinskij, S. O., 260

Green, D. E., 5, 68, 328, 334, 335 Green, M. C., 227, 249 Greene, R. C., 52 Greenway, H., 177 Gregg, J. H., 337, 338 Gregor, J. W., 169, 180 Gregory, F. G., 247 Gregory, F. J., 411 Gregory, L. E., 185 Griesbach, R. A., 195, 197 Griffin, W. J., 39, 116, 129, 130 Griffith, G. ap., 175 Griffith, T., 129, 148, 150, 151 Griffiths, D. E., 93 Griffiths, D. J., 174 Griggs, W. H., 203, 309, 312 Grimm, H., 202 Grimshaw, J., 149 Grishina, G. S., 64, 66, 67 Gröger, D., 150, 153, 155, 157, 161 Gross, D., 150 Gross, J. A., 40 Gross, P. R., 31 Grossi, N., 312 Grove, J. F., 204 Grümmer, G., 262 Grunow, J., 349 Guggenheimer, M., 145 Guillard, R. R. L., 42, 43, 44, 49, 50, 171 Gulisashvili, W. S., 195 Gulline, H. F., 229 Gunckel, J. E., 227, 228 Gundersen, K., 203 Gusev, N. A., 364, 379 Guseva, A., 154 Gustafson, F. G., 304, 305, 306, 311 Guttridge, C. G., 203 Guzhev, Y. L., 203

H

Haarer, A. E., 443
Haas, A. R. C., 177
Haavik, A. G., 93
Haberlandt, F., 189
Hackett, D. P., 121, 445
Hackney, A. L., 337, 338
Haddock, J. L., 418
Hader, F., 349
Haeckel, A., 258, 259
Haemmerling, J., 51
Hagan, R. M., 423, 426
Hageman, H. A., 273, 278, 279, 280, 293
Hageman, R. H., 59, 61, 66
Hagen, C. E., 433
Hagihara, H. H., 426
Hagman, M., 264
Halgh, W. G., 39
Halnes, T. H., 52

Halais, P., 428, 429 Hale, C. R., 309, 310, 312, 318 Hale, V. Q., 172 Halevy, A. H., 280, 283, 288, 289, 295, 410 Halfon-Meiri, A., 428 Hall, N. S., 59 Hallaway, M., 24 Halperin, J., 277, 278, 279, 294 Hamill, R. L., 146 Hammel, H. T., 425 Hammer, K. C., 206 Hammer, U. T., 46 Hämmerling, J., 17 Hammond, B. L., 202 Hammond, L. C., 426 Hamner, C. L., 319 Handler, P., 150 Hansch, C., 272, 295 Hansen, C. J., 306 Hanson, C. H., 283 Hanson, J. B., 3, 21, 22, 153 Hanson, K. R., 122, 133, 445 Hara, N., 241 Hardy, A., 38 Harlan, H. V., 259, 260 Harley, J. L., 128 Harman, E. A., 11 Harper, B. J. T., 146, 151, 152, 159 Harper, G. E., 466 Harrington, G. T., 190 Harris, A. Z., 101, 102, 103, 107, 108, 109, 110, 115 Harris, J. A., 175 Harris, N., 308 Harris, R. W., 306 Hart, J. R., 465 Hart, R. W., 455 Harteck, P., 260 Hartman, H., 41 Hartmann, H. T., 305 Hartree, E. F., 454, 456, Hartsema, A. M., 185, 189, 190 Hartt, C. E., 430 Harvey, H. W., 66 Harvey, P. H., 174 Hase, E., 335 Hasegawa, G., 428, 429 Hashimoto, T., 202 Hasse, K., 145, 146, 148 152 Hassid, W. Z., 329 Hastings, J. W., 31 Hatano, S., 58, 59, 60, 61, 68 Hatch, M. D., 42, 332 Hatefi, Y., 93 Hathway, D. E., 448

Hattori, A., 46, 59, 62, 63, 64, 65, 66 Havinga, E., 3, 40 Havis, A. L., 304 Hawker, J. S., 124 Hawker, L. E., 329, 336 Haxo, F. T., 51 Hay, J. R., 202 Hayase, H., 261 Haynes, J. L., 418 Hayward, H. E., 424 Healton, L. H., 419 Heath, O. V. S., 205 Heber, U., 355 Hecht, A., 265 Hedgecock, L. W., 59 Heftmann, E., 336 Heim, M., 156 Heinen, W., 258, 263 Hainicke, A. J., 318 Heinzelman, D. C., 174 Heimsch, C., 173, 175 Heimsch, C., 173, 175
Heifenberger, A., 445
Heigeland, K., 43
Heller, R., 424
Hellman, K. P., 148, 150
Hellström, N., 256
Helm, J., 231, 234
Helmers, H., 262
Hemberg, T., 185, 208, 211, 317
Hemming, H. G., 203 Hemming, H. G., 203 Hemmingsen, E., 425 Henckel, P. A., 363-86; 212, 358, 363, 364, 365, 367, 368, 369, 370, 371, 374, 375, 378, 380 Hendershott, C. H., 208, 209 Henderson, L. M., 150, 151, 153 Hendricks, S. B., 185, 198, 200, 451, 464 Hendrickson, A. H., 305, 419 Hendrickson, R., 208 Henson, L., 174 Herdtle, H., 259 Heredia, C. F., 59 Hershenov, B., 50 Heslop-Harrison, J., 30, 249 Heslop-Harrison, Y., 195, 197 Hess, D., 28, 29 Hess, E. H., 446 Hess, U., 47 Hewitt, A. A., 319 Hewitt, E. J., 43, 59, 61, 66, 68, 175 Heyes, J. K., 18, 28, 32, Heynig, H., 48 Hiatt, A. J., 122, 123, 127, 179 Hickling, C. F., 401

Hickman, D. D., 83, 88

Hickman, M. G., 272, 280 Hield, H. Z., 305, 306, 310, 312 Hiesey, W. M., 169, 180, 357, 412, 415 Higaki, T., 288 Highet, R. J., 161 Higinbotham, N., 235 Hill, H. M., 52 Hill, R., 389 Hill, R. G., Jr., 305 Hills, F. J., 428, 429 Hilton, J. L., 52 Hiraizumi, Y., 261 Hirose, T., 304, 305 Hirsch, G., 350 Hitchcock, A. E., 206 Hite, B. C.. 190 Hoch, G., 138 Hodge, A. J., 8 Hodnett, G. E., 410 Hoffer, G. N., 174 Hoffman, C. T., 175 Hoffman, W. F., 175 Hoffpauir, C. L., 174 Hofmann, A., 153, 155, 156, 157 Hofsten, A. V., 332 Högberg, B., 257 Höhn, K., 21 Hölbert, J. R., 174 Hölden, M., 445 Holdsworth, M., 205 Hollunger, G., 87 Holman, R. M., 259 Holmes, R. S., 172, 176 Holm-Hansen, O., 47, 127 Holt, A. S., 9, 467 Holt, H. S., 460 Holter, H., 336 Holzer, H., 116, 129 Holzer, K., 347, 348, 355, 358 Homann, P., 145 Hopkins, H. T., 433 Hoppert, C. A., 148 Horecker, B. L., 102, 110, 112, 113 Horenstein, E. A., 339, 340 Horio, T., 80, 81, 86, 91, 92, 94 Horn, N. L., 201, 202 Horton, A. A., 89 Hostak, M. B., 336 Hotta, Y., 33 Houghtaling, H. B., 304 Houwink, A. L., 332, 335 Howe, K. J., 249 Howe, M. E., 329 Howk, B. W., 174 Howlett, F. G., 410, 436 Huang, R.-C. C., 28, 30 Huart, R., 19, 23, 24 Hubbard, W. L., 273, 278, 279, 280, 293 Huber, B., 364 Huber, P., 262

Huberty, M. R., 418
Hübner, G., 150
Hudock, G. A., 40
Hudson, J. P., 248
Huggler, K., 257
Hughes, A. P., 243
Hughes, D. E., 83
Hughes, J. C., 50
Hulburt, E. M., 48
Hull, J., Jr., 204
Hultin, H., 5
Hulin, H., 0, 5
Humbert, R. P., 419
Humphries, E. C., 446
Hunter, F. R., 50
Hunter, J. R., 335
Hurlburt, R. E., 50
Hurwitz, J., 31, 112, 113
Hutner, S. H., 37-56; 37, 40, 41, 43, 52
Huziaige, H., 60, 66

1

Ibanez, M. L., 66, 76, 79, Ibrahim, J. H., 288 Ibuki, F., 19 Ichimura, K., 23 lida, K., 63, 68
lijin, W., 146 Ikeda, Y., 444 Ilyin, W. A., 364, 366 Imaeki, I., 158 Imaseki, I., 146, 158 Imagawa, H., 444, 448 Imamura, S., 33 Inada, Y., 62 Ingestad, T., 410, 428, 429, 434, 436 Inokuchi, H., 28 Isenberg, F. M. R., 279, 285, 287 Isenberg, H. D., 49 Ishida, S., 352 Ishikawa, K., 32 Ishikawa, S., 199 Ishikawa, T., 199 Isobe, M., 430 Ito, T., 86 Itoh, M., 74, 75 Ivanami, Y., 262 Iwanami, Y., 262 Ivimey-Cook, W. R., 304 Iwakiri, B. T., 203, 309 Iwanov, L. A., 356 Iwasaki, H., 51 Izawa, M., 20, 23 Izawa, S., 74, 75

J

Jablokov, A. V., 200 Jackson, G. A. D., 307, 309, 310, 319 Jackson, R. L., 64 Jackson, T. H., 191

Jacobi, G., 135 Jacobs, E. E., 9, 95 Jacobs, W. P., 234, 235, 237, 247, 320 Jacobson, A., 429, 434 Jacobson, J. S., 446, 447 Jacobson, L., 178 Jaffe, L. F., 327 Jaffe, M. J., 279, 285, 287 Jagendorf, A. T., 50, 65 Jahn, T. L., 40 Jakoby, W. B., 112 Jakowska, S., 45 Jakusheva, E. I., 205 James, A. T., 12, 66, 127 James, D. B., 174 James, W. O., 121 Jamieson, V. C., 421 Jaminet, F., 145 Janczo, G., 159 Janot, M. M., 153 Jansen, L. L., 52 J'Anthony, C. M., 273, 278, 279, 280, 293 Jean, D. B., 446 Jeener, R., 17 Jefferies, R. L., 169-84; 179 Jeffrey, N. R., 149 Jeffreys, R. A., 172 Jeffs, P. W., 152, 161 Jenkins, J. M., Jr., 206 Jenny, H., 425 Jenny-Lips, H., 350 Jensen, A., 74 Jensen, W. A., 18 Jiminez, E., 135, 138 Jindra, A., 143, 155 Joacobsen, S. T., 428 Joham, H. E., 428, 429, 431 Johnson, C. M., 178, 428 Johnson, D. F., 336 Johnson, J. M., 176 Johnson, M. J., 171 Johnson, L. P. V., 201 Johnson, M. A., 226 Johnson, S. P., 311, 402 Johnson, V. A., 413 Johnston, J. R., 333 Johnston, R. D., 352 Johnston, T. D., 1 Johri, B. M., 255 175 Johchine, G., 127 Jones, D. F., 410 Jones, D. G., 174 Jones, J. O., 174 Jones, L. A., 447 Jones, L. E., 260 Jones, M. D., 259 Jones, O. T. G., 59, 60 Jones, W. E., 172 Jonsen, J., 43 Joseph, H. C., 193 Joshi, G., 127 Joshi, J. G., 150 Jost, L., 261, 264

Jowett, D., 180 Juan, C., 156 Juby, P. F., 151 Judd, D. B., 457 Jurgens, J. F., 174 Kacar, B., 425 Kaczkowski, J., 155 Kadis, S., 39, 40 Kahn, A., 2, 4, 7, 8, 202, 446 Kahn, J., 3 Kaienburg, A., 259 Kain, J. M., 42 Kalberer, F., 155, 156 Kaler, V. L., 8 Kallio, P., 202 Kamenoto, H., 288 Kamenoto, H., 288 Kamen, M. D., 59, 66, 73, 76, 77, 78, 79, 83, 86, 89, 91, 94 Kandel, S. I., 144, 153, 156, 157 Kandler, O., 52, 108, 114 Kanehiro, Y., 425 Kano, K., 304, 305 Kaplan, R., 231 Kapoor, M., 309, 312, 314 Karakashian, M. W., 31 Karakashian, S. J., 45 Karali, E. F., 43 Karas, J. G., 289 Karnofsky, D. A., 42 Kārpāti, I., 189 Kārpāti, V., 189 Karrer, W., 145 Kasai, Z., 132 Kasobutskaya, L. M., 8 Kaspryzyk, Z., 103 Kates, M., 10, 11 Katz, E., 74, 75, 88 Katz, J. J., 44, 333 Katz, Y. H., 413 Kaufman, M. W., 318 Kaur, R., 22 Kauss, H., 52 Kawahara, H., 279, 282, 283, 293, 295 Kawarada, A., 204 Kawase, M., 195, 203, 206, 207, 208 Kay, L. D., 101, 102, 103, 107, 108, 109, 110, 115 107, 108, 109, 110, 113 Keane, M., 40, 41 Kearney, P. C., 127, 135 Keck, D. D., 357 Kefford, N. P., 316 Keilin, D., 454, 456, 465 Keister, D. L., 81 Kellner, K., 169 Kelly, J. F., 174 Kemp, A. W., 412 Kende, H., 296, 297 Kennard, W. C., 321 Kennedy, E. P., 11

Kenten, R. H., 136 Kenworthy, A. L., 308, Kepes, A., 169 Kershaw, K. A., 44, 45 Kessel, D., 171 Kesseler, E. v., 259 Kesseler, B., 19, 20, 21, 288, 372, 412 Kessler, E., 57-72; 44, 45, 57, 60, 61, 62, 63, 64, 65, 66, 67, 68 Kessler, G., 332 Kesterson, J. W., 208 Ketchum, B. H., 44 Kettner, H., 204 Key, J. L., 3 Khlebnikova, N. A., 367, 368 Khoo, U., 258 Kidd, F., 317 Kim, W. K., 280 Kimball, M. H., 191 Kimura, K., 28 Kindel, P. K., 118 King, M. E., 400, 401 Kinsky, S. C., 59 Kinsky, S. C., 59
Kiplinger, D. C., 272, 290
Kirbuchi, T., 444
Kirby, G. B., 161
Kirby, G. W., 159
Kirk, J. T. O., 39
Kirk, M., 103, 105, 106, 109, 112, 115, 116, 117, 128, 130
Kirkpatrick, H. C., 23
Kirkwood, S. 145, 146. Kirkwood, S., 145, 146, 147, 152, 158 Kiyasu, J. Y., 11 Kiyohara, T., 46, 47 Klebs, G., 186, 195, 205, 336 Klein, S., 8, 185, 199 Kleinschmidt, G., 151, 152, 158, 159 Klouwen, H., 5, 10 Knight, S. G., 330, 337 Knowlton, E. H., 259, 260 Kobayashi, M., 59 Kobel, H., 153, 155, 156, 157 Koblet, R., 190 Kobyakova, A. M., 12 Kobylin, A. A., 368 Koch, W., 354, 357 Koczor, J., 159 Koenig, D. F., 446 Kofranek, A. M., 428 Kohn, B., 400, 401 Kok, B., 9, 65, 138, 389, 451, 460, 466, 467 Kolderie, M. Q., 337 Kolesnikov, P. A., 133, 137 Koller, D., 185, 199, 201 Kolobkova, E. V., 208 Kolotova, S. S., 363, 375

L

Konarev, V. G., 365 Koontz, H. V., 175 Korezkaja, T. F., 366 Korkes, S., 64 Kosikova, P. G., 202 Kotomina, R. I., 203 Kovachik, W. G., 428 Kovačová-Ferjančiková, V., 203 Kowanko, N., 153 Kozlova, L. M., 196, 211 Kozlowski, T. T., 413, 423 Krall, A. R., 137 Kramer, H., 44, 62 Kramer, P. J., 185, 195, 196, 417 Krampl, V., 148 Krasna, A. I., 41 Krasnovskii, A. A., 8, 75 Kraus, E. J., 318 Krauss, R. W., 44, 394, 396, 400, 434 Kreger, D. R., 328, 332, 400 Kreier, V. A., 189 Kretovich, V. L., 131 Kreutz, W., 2, 6 Krewson, C. F., 277, 280 Kribben, F. J., 202 Krippahl, G., 128, 130 Krishnan, P. S., 137 Kristiansen, J., 48 Krivanek, J. O., 337, 338 Krjatchenko, D., 256 Kroh, M., 263 Krolop, H., 262 Kronenberg, G. H. M., 81 Krotkov, G., 138, 139 Kruckeberg, A. R., 169, 180 Krug, H., 195, 203 Krull, E., 364 Kruzhilin, A. S., 369 Kubelka, P., 457, 458, 467 Kuczmak, M., 133 Kudrajashova, N. A., 208 Kudrejavecf, V. A., 256 Kuehnert, C. C., 240 Kuenzler, E. J., 44 Kuhl, A., 40 Kuhn, E., 261, 262 Kühn, O., 197 Kulajewa, O., 318 Kumada, 63, 68 Kumagai, T., 199 Kumar, H. D., 47 Kummerov, J., 185 Kuferstein, D., 49 Kuraishi, S., 295 Kurtz, E. B., 256 Kurtz, L. T., 433 Kuyama, A., 333 Kwak, H., 262

Kylin, A., 66

Lackey, J. B., 50 Laetsch, W. M., 247 Lagatu, H., 428 Lagerwerff, J. V., 424 Laland, S., 43 Laloraya, M. M., 25, 123, 445, 446 Lamb, J., 444 Lamberts, B. L., 147 Lammerts, W. E., 200 Lamport, D. T. A., 122 Lane, H., 466
Lane, A., 24, 29, 185,
204, 211, 281, 283, 295,
296, 297
Lang, H. M., 81, 92 Lange, O. L., 355, 368 Langner, W., 45 Langridge, J., 173 Larcher, W., 337, 352, 353, 355 Larsen, H., 74, 88 Larson, D. A., 256, 257 Laties, G. G., 134 Latimer, P., 453, 454, 455 Laude, H. M., 205, 206 Lauer, E., 190, 193, 195 Lautenschlager-Fleury, D., 359 Lavee, S., 312 Lavine, L. S., 49 Lawrence, J. V., 175 Lawrence, Z. W., 175 Lawton, J. R., 333 , 175 Laycock, D. H., 414 Lazareva, A. A., 212 Lazaroff, N., 47, 333 Lazzarini, R. A., 59, 61 Lear, P. E., 49 Leben, C., 203 Lebezhnikova, V. M., 202 Leblova, S., 155 Lederberg, J., 330 Ledingham, G. A., 340 Ledoux, L. L., 19, 23, 24 Lee, J. A., 175 Lee, J. W., 50 Leech, R. M., 125 Lee, Shu-hsien, 206 Leeper, R. W., 273, 277, 285 Leete, E., 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 158
Lefort, M., 333
Legallais, V., 462, 463
Lehmann, E., 185, 196, 198, 201 Lehotsky, L. Leike, H., 208 Leistner, W., 349 Leitz, F. H. B., 151 Lemon, E. R., 415 Leonard, C. D., 209 Leonard, E. R., 317

Leonard, N. J., 149 Leopold, A. C., 22, 272, 303, 305, 320 Lepeschkin, V. V., 367 Letham, D. S., 316 Leveille, G. A., 400, 401 Levine, E. E., 40 Levine, R. P., 40 Levine, S., 330 Levitt, J., 185, 364 Levy, N., 159 Lewin, J. C., 50 Lewin, R. A., 37 Lewis, C. W., 256, 257 Lewis, D., 264, 265 Lewis, D. A., 206 Lewis, L. N., 204, 312 Lewis, P. C., 454 Leyon, H., 2 Libbert, E., 211 Lichtenberg, E. A., 261 Lichtenthaler, H. K., 6, 7 Liddel, G. U., 336, 338 Lieberman, M., 448, 466 Liebster, G., 204 Liede, V., 157 Liefstingh, G., 259 Liesenkotter, I., 114 Likes, C. J., 446 Lilleland, O., 178, 305 Lilly, V. G., 329 Linck, A. J., 318 Lindberg, M., 156 Lindberg, R. C., 23 Lindstrom, E. S., 66, 76, 79, 94 Lindstrom, R. S., 288, 290, 292, 295 Lineberry, R. A., 174 Lingappa, B. T., 340 Link, C. B., 273, 286, 293 Links, J., 40 Linser, H., 287 Linskens, H. F., 225-70; 255, 256, 257, 258, 262, 263, 264, 265 Lipmann, F., 73, 83, 86, 91 Lipp, A. E. G., 329 Lippert, L. F., 203 Littau, V. C., 31 Litvinenko, S. N., 202, 212 Litinov, L. S., 364 Liutova, M. N., 368 Liverman, J. L., 256, 311 Livingston, B. E., 421 Livingston, G. A., 290 Lockhard, R. G., 174 Lockhart, J. A., 203, 290, 295, 296, 297 Loefer, J. B., 37 Loening, U. E., 22, 28 Loewus, F. A., 132, 262 Loiseau, J. E., 227, 228, 229, 241

Lona, F., 202, 203, 288 Lones, G. W., 329 Long, C., 10 Long, E., 206 Long, E. M., 304 Long, I. F., 414 Longman, K. A., 285 Lonnquist, J. H., 410 Loo, Y. H., 153 Loomis, N. H., 191, 196 Loomis, W. E., 317, 414, 426, 460 Loomis, W. F., 329 Lorenz, O. A., 428, 429, 430 Losada, M., 65, 66, 67, 78, 82, 87, 93 Lothian, G. F., 454 Louis, J., 231 Loveless, M. H., 257 Lovenberg, W., 81, 93 Lovett, J. S., 339 Lovett, J. S., 338 Lowe, D., 203 Lubart, K. J., 41 Lubbock, J., 242 Lubin, M., 171 Luckner, M., 64 Luckner, M., 154 Luckwill, L. C., 208, 249, 303, 306, 307, 308, 309, 311, 312, 316, 320, 321 Ludewig, I., 45 Lund, H. A., 3, 22 Lund, J. W. G., 48, 50 Lundegårdh, H., 354, 462, 464, 467 Lunden, R., 256, 257 Lunt, O. R., 428 Lvov, S. D., 366 Lwowski, W., 153 Lybeck, B. R., 352 Lygren, T., 43 Lynch, V., 101, 103, 107, 110 Lynch, V. H., Lynen, F., 116, 213 Lyness, A. S., 174 Lyttleton, J. W., 112, 113 Lyubimova, V. E., 375

### M

McCaldin, D. J., 144, 146, 158, 159
McCall, E. R., 174
McCalla, D. R., 25, 26
McCalla, D. R., 25, 26
McCalla, T. M., 426
McCarthy, A. J., 42, 44
McCarville, W. J., 281
McClelland, T. B., 206
McComb, A. J., 315
McConnell, W. B., 124, 147, 150, 155
McCune, S. B., 309, 310, 312
McCurdy, H. D., 339
McCurdy, H. D., 339
McDaniel, H. R., 37

McDowell, M. E., 400, 401 McElroy, W. D., 43, 58, 59, 62, 68 McClashan, M. L., 425, 429 McClashan, M. L., 425, 429
Machett, T. J., 146
Machlis, L., 49, 262, 335
Maciasr, F. M., 37, 41, 42
McIrath, W. J., 172
McIroy, I. C., 414
McKaig, N., 174
McKay, E., 424
McKee, H. S., 57
Mackler, B., 68
McLachlan, J., 46
McLaughlin, J., 46
McLaughlin, J. J. A., 41, 45, 50, 51 45, 50, 51 MacLean, D. C., 285, 290 McLean, J. D., 8 McLean, R. C., 304 MacLennan, D. H., 128 Mc Loughlin, B. J., 155 McMaster, R. D., 255 MacMillan, J., 204, 315 McNall, E. G., 64 McNary, J. E., 66 McVey, G. R., 203 Magistad, O. C., 424 Magness, J. R., 174 Magruder, R., 206 Maheshwari, P., 255 Mahler, H. R., 68 Maisack, H., 148 Majumdar, G. P., 238
Majumder, S. K., 265
Mäkinen, Y. L. A., 264
Maksimova, I. V., 392, 393 Malamy, M., 31 Malavalta, E., 428 Maloney, T. E., 44 Mameli, C. R., 258 Mandeville, S. E., 333 Mándy, G., 189 Mangelsdorf, A. J., 263, 410 Manghetti, A., 153 Manghtti, A., 153 Mangin, L., 259 Mann, J., 158 Mann, L. K., 206 Mann, P. J. G., 147, 148, 149, 155 Manton, I., 48 Mapson, L. W., 137 Marcus, A., 24 Margara, J., 286 Margolina, K. P., 365, 369, 374, 378 Mariat, F., 330, 332 Marinos, N. G., 4 Marino, L., 144, 145, 146, 147, 149, 150, 151, 152 Marr, J. W., 349 Marr, J. W., 349 Marre, E., 125 Marrè, E., 317 Marsh, H. V., Jr., 124 Marth, P. C., 203, 204, 275, 277, 278, 279, 280, 283, 284, 285, 288, 290, 291, 293, 306

Martin, E. V., 418 Martin, G. C., 291 Martin, H. H., 333 Martin, R. V., 445 Martin, W. E., 318, 428 Marushige, K., 27 Marushige, Y., 27 Maruyama, Y., 59 Mason, H. L., 169 Mason, H. S., 448 Massicot, J., 152 Massini, P., 109, 110 Mastalerz, J. W., 286 Masuda, Y., 21 Mather, J. R., 413, 423 Matovich, V. B., 37, 52 Matsudaira, C., 51 Matsumura, M., 177 Matsushita, S., 19 Maume, L., 174, 428 Mauvisseau, M. J., 174 Maxie, E. C., 319, 321 Maximov, N. A., 243, 364, 365, 374 Mayall, B. H., 333 Mayaudon, J., 112, 113 Mayber, A., 185, 199 Mayer, A. M., 136, 185, 189, 197, 199, 209, 210 Mayne, B. C., 389 Mayr, H. H., 281, 287 Mazè, P., 213 Meader, E. M., 306 Mears, K., 316 Medina, A., 59, 60, 61 Mechelke, F., 255 Mees, G. C., 203 Meheshwari, N., 28 Mehlich, A., 425 Meiss, A. N., 445 Melchers, G., 32, 180 Mellin, D. B., 73, 89 Melton, T. M., 278 Mendel, J. L., 62 Menke, B., 6 Menke, W., 1, 2, 3, 6 Mercer, F. V., 8 Mergen, F., 261 Merrett, M. J., 39, 124 Mestre, H., 456 Metzner, H., 27, 29, 467 Meves, F., 256 Meyer, C. M., 39 Meyers, A., 400 Michaelis, P., 351, 352, 348 Mick, H. H., 421, 416 Middlebrook, J. B., 37 Middleton, W. J., 149 Mihara, S., 335 Mika, E. S., 169 Mikhalev, A. Ya., 369 Miki, H., 263 Miki-Hirosige, H., 263 Mikkelsen, D. L., 428 Mikkelsen, V. M., 256

Millar, E., 43

Millener, L. H., 248, 249 Miller, C. O., 27, 272, 303, 315, 316 Miller, J. A., 11 Miller, R. M., 39 Millerd, A., 447 Millington, W. F., 228, 248 Mirsky, A. E., 28, 31 Misra, R. K., 415 Mitchell, D. G., 449 Mitchell, H. K., 169 Mitchell, J. W., 272, 275, 277, 272, 292, 290, 291, Mitchell, J. W., 212, 213, 277, 279, 280, 290, 291, 293, 297, 318
Mitchell, P., 328
Mitchell, R. L., 428, 434
Mitchell, T. W., 203, 204
Mitchell, W. D., 286, 287, 202, 203, 204 290, 291, 292 Mitner, H. W., 412 Mitsui, E., 204 Miyamoto, T., 208, 288, 289 Miyano, M., 11 Modlibowska, I., 203 Moewus, F., 209 Mohan Ram, H. Y., 242 Mohl, H. v., 261 Molin, N., 410, 436 Molisch, H., 247, 259, 261 Monselise, S. P., 20, 21, 389, 413, 428 Monteith, J. L., 414 Monteith, N. H., 435 Montfort, C., 358 Mooney, H. A., 354, 355, 357, 358, 359 Moorby, J., 248 Moore, C. W. E., 174 Moore, J. F., 319 Moraw, R., 451, 466 Moret, V., 94 Morgan, D. G., 203 Morgan, P., 152 Moriber, L. G., 50 Morimura, Y., 40, 335 Morita, S., 77, 78, 91 Morre, D. J., 25, 26 Morris, E. O., 202, 332 Morris, I., 59 Morris, M.-E., 46 Morrison, R. I., 123 Morrow, I. B., 234, 235, 237 Morse, M., 428 Mortenson, L. E., 64, 81, 93 Mortimer, D. C., 130, 131 Mortimer, R. K., 333 Morton, A. G., 59, 62, 337 Moschkov, B. S., 205, 206 Moscicky, Z., 412 Moseley, J. M., 446 Moses, V., 113, 127 Mosolova, I. M., 125 Moss, D., 415

Moss, M. L., 49 Moss, R. A., 460 Mothes, E., 150 Mothes, K., 24, 25, 26, 143, 144, 147, 149, 150, 151, 152, 153, 155, 157, 159, 161, 249, 318, 366, 372 Mouat, M. C. H., 179 Mower, H. F., 64 Mowry, D. T., 278 Mudd, S. H., 146, 158 Mueller, R., 447 Mühlethaler, K., 1, 2, 8, 256, 264 Muir, R. M., 272, 295, 311 Müller, A., 451, 466 Muller, A., 389 Müller, I., 62 Munger, H. M., 172 Munk, F., 457, 458, 467 Munns, D. N., 178 Murakami, Y., 204, 314 Murashige, T., 288 Murchio, J. C., 454 Murneek, A. E., 317, 318 Murray, D. B., 414 Murray, M. D., 174 Murray, R. G. E., 333 Musgrave, R. B., 415 Myagkova, A. N., 380 Myers, A. T., 318 Myers, J., 43, 65, 388, 389, 391, 393, 395, 405 Myers, M., 444 Myers, W. M., 169, 175

N Nachmony-Bascomb, S.,

205, 206 Nadai, J., 445 Nagao, M., 199, 204 Nakabayashi, T., 444 Nakasatomi, K., 283 Nakayama, M., 414 Nalewajko, C., 39, 40 Namiki, T., 203 Nance, J. F., 63 Nason, A., 43, 57, 58, 59, 60, 61, 65 Nasr, T. A. A., 285, 286 Natarajan, C. P., 443 Nathan, H. A., 42 Naundorf, G., 265 Naylor, A. V., 200, 204 Naylor, J. M., 185, 202, 203 Nebel, B. R., 260 Necesany, V., 285 Neelin, E. M., 32 Neely, P. M., 314 Neenan, M., 175 Negelein, E., 62, 63, 65 Neger, T. W., 368 Neish, A. C., 121, 133 Neish, A. R., 152

Nekrasova, T. V., 202 Nelson, C. D., 139 Nelson, W. L., 425 Nemeth, P. E., 158 Neufeld, E., 11 Neumann, G., 202, 203 Neushul, M., 51 Neuwinger-Raschendorfer. New 1, 349 Ney, L. F., 390 Newell, L. C., 259 Newman, D. W., 12 Newton, J. W., 73, 79, 83, 89, 94 Newman, I. V., 226, 227, 228, 229, 235 Newsome, L., 305 Nicholas, D. J. D., 43, 57, 58, 59, 60, 61, 174 Nickell, L. G., 200 Nickerson, W. J., 327-44; 327, 328, 329, 330, 331, 332, 333 Nicolai, E., 334 Niederpruem, D. J., 329 van Niel, C. B., 65 Nielsen, N., 260 Nienstaedt, H., 195 Nigam, S. N., 124 Nightingale, G. T., 304, 423, 428 Nigrelli, R. F., 45 Nikolaeva, M. G., 190, 196, 202, 208, 211 Nikolas, L., 256 Ninnemann, H., 296, 297 Nishida, K., 127 Nishimura, M., 76, 77, 79, 80, 83, 86, 94, 95 Nitsan, J., 32 Nitsch, C., 185, 203, 204, 206, 207, 208, 307, 308, 309, 316 Nitsch, J. P., 185, 195, 203, 204, 205, 206, 207, 208, 210, 231, 303, 305, 307, 308, 309, 315, 316, 319 Njoku, E., 246, 248 Nobs, M. A., 412 Noda, Y., 27 Nogtev, V. N., 378 Nordhausen, M., 243 Norris, K. H., 200, 451, 456, 462, 464, 465 Northcote, D. H., 328 Norwood, B. L., 283 Nowacki, E., 145, 148, 149 Nozaki, M., 66, 78, 79, 80, 82, 85, 86, 93 Nutile, G. E., 209

0

Oaks, A., 122 Ochoa, S., 102, 110, 112, 150

O'Donovan, D., 144 Oelke, J., 263 Oertli, J. J., 428 Ogata, G., 414 Ogata, S., 82, 86 Ogawa, T., 74, 75 Ohki, K., 430, 431, 434 Ohmachi, K., 59, 63, 68 Ohmann, E., 136 Ohyama, H., 26 Okabe, K., 93 Okamoto, H., 27 Okany, A., 144, 153, 156, 157 O'Kelley, J., 261 O'Kelley, J. C., 43 Oknina, E. Z., 212, 214 Oknina, E. Z., 212, 214 Okonuki, K., 259 Okumura, F. S., 315, 316 Oldschool, M., 444 Ollagnier, M., 428, 431 Olmo, H. P., 306, 309, 310 Olmstead, M. A., 40 Olney, H. O., 214 Olsen, K. L., 464 Olsen, S. R., 433 Olson, J., 195, 199 Olson, J. M., 74, 75, 76, 77, 78, 79, 81, 84, 86, 94, 95 Olson, J. S., 195 Olson, R. A., 8 Olszewska, M. J., 25 Omura, H., 58, 59, 60, 61, Ongun, A., 125, 127 Oota, Y., 17-36; 17, 22, 23, 24, 25, 27, 28, 446 Oparin, A. I., 372 Oppenheimer, H. R., 418, Ordal, Z. J., 330 Orlowa, I. M., 356 Ormerod, J. G., 73, 82 Osajima, Y., 58, 59, 60, 61, Osawa, S., 17, 22, 33 Osborne, D. J., 24, 25, 26, 305 Osipova, O. P., 6 Osretkar, A., 394 Osteux, R., 147 Oswald, W. J., 387-408; 387, 391, 392, 393, 394, 395, 396, 398, 404, 405 Ota, T., 279, 282, 283, 286, 287, 293, 295 Otsuka, H., 335 Ottolenghi, P., 336 Ouellet, C., 101, 103, 107, Ouellette, G. J., 174 Overcash, J. P., 191, 196 Overton, E., 3 Owens, F. V., 177 Owens, O. v. H., 138

Ozaki, K., 430 Ozol, A. M., 212

P

Paasche, E., 40 Pack, D. A., 212 Padilla, G. M., 50 Paech, K., 367 Pakshina, E. V., 75 Paleg, L. G., 297
Palmer, J. K., 445
Palmer, M. J., 122, 124
Pandey, K. K., 263 Paneque, A., 65, 66, 67 Pardee, A. B., 89, 329 Paribok, T. A., 206
Park, J. T., 333
Park, R. B., 6, 7, 113, 117
Parke, M., 48
Parker, B. C., 45 Parker, J., 288, 353, 356 Parker, M. W., 200 Partanen, C. R., 228 Parthier, B., 24, 26 Pasher, I., 37, 43, 52 Pasquil, F., 414 Passeger, F., 258 Pateman, J. A., 5 Paton, J. B., 258 59 Pätzold, C., 203
Paulus, H., 11
Paxton, R. G., 281
Payes, B., 134 Payne, R. N., 290 Peacock, C. L., 329 Pearse, H. L., 176, 445 Pearson, H. M., 309 Peel, M., 134 Penman, H. L., 413, 414, 422 Penn, P. T., 445 Pennelas, P., 153 Perry, T. O., 357 Person, C., 24 Péter-Contesse, J., 352 Peterkofsky, A., 109 Peters, D. B., 418 Peters, R. A., 122 Petersen, B. G., 176 Peterson, D. F., 423 Petinov, N. S., 368, 369, 371, 373 Petrasovich, I., 136 Petrochenko, E. I., 133 Petrovskaja-Baranova, T. P., 257 Petrovskaya, T. P., 212, 213 Petterson, J., 257 Petterson, J., 257 Petty, J. H. P., 203, 204 Pfeiffer, N. E., 257, 260 Pfund, M., 258, 259, 261 Phillip, J. R., 424 Phillipson, W. R., 226, 228 Phillippova, L. A., 356 Phillips, I. D. J., 206, 207, 208

Phillips, M. W., 429 Philp, G. J., 191
Phinney, B. O., 204, 272, 303, 314 Pichinoty, F., 59, 64 Pieniažek, J., 212 Pieringer, R. A., 11 Pierpoint, W. S., 126, 134, 445 Piiroinen, P., 202 Pilgrim, A. J., 391, 402 Pimenova, M. N., 392, 393 Pinamonti, S., 94 Pintner, I. J., 49 Piringer, A. A., 277, 278, 279, 283, 286, 287, 288, 290, 294 Pirschle, K., 359 Pirson, A., 43 Pisek, A., 345, 347, 350, 351, 352, 353, 354, 355, 356 Piskarev, V. I., 200 Pitschmann, H., 354 Plantefol, L., 227, 228, 241 Platz, G. A., 329 Plempel, M., 335 Plieninger, H., 153, 157 Pogell, B. M., 446 Pogo, A. O., 32 Poindexter, E. H., 447 Poljakoff-Mayber, A., 185, 197, 199, 203, 208, 209 Pollard, J. K., 231, 315 Pollock, B. M., 197, 200, 201, 211, 214, 215 Pollock, J. R. A., 202 Pon, N. G., 6, 112, 113, 117, 127 Pons, W. A., Jr., 174 Poostchi, I., 260 Popcov, A. V., 189, 193, 196, 202 Pope, D. T., 172 Pope, M. N., 259 Popham, R. A., 227, 228 Popják, G., 155, 156, 157 Popoff, M., 379 Popova, K. A., 376 Porter, C. A., 446 Porter, H. K., 445 Posltová, O., 59 Posternak, T., 332 Pound, G. S., 248 Powell, J. F., 335 Powell, L. E., Jr., 308 Powers, L., 177 Powers, W. L., 430 Prager, J. C., 42 Pramer, D., 333 Pratt, C., 306, 307, 308, 316 Pratt, D. C., 88 Precht, H., 259, 260 Prelog, V., 153 Presscot, J. A., 414

Preston, R. D., 334, 335, Preston, W. H., Jr., 273, 275, 277, 279, 280, 281, 285, 286, 288, 293, 297
Prevot, P., 428, 431
Price, C. A., 43
Price, W. C., 453 Primer, P. E., 305, 310, 313, 320 Prince, A. E., 388 Prince, L. M., 1, 2 Pringsheim, E. G., 38, 41, Pringsheim, O., 49 Pritchard, G. G., 39, 116, 129, 130 Probine, M. C., 334, 335 Proctor, V. W., 59 Propst, B., 317 Prosser, M. V., 307, 309, 310, 319 Provasoli, L., 37-56; 38, 41, 49, 50, 51, 52 Pruszinsky, S., 259
Prutzer, E., 349
Pshenova, K. V., 137
Purr, A., 445
Purvis, O. N., 189, 190
Pyriki C. 447 Pyriki, C., 447

O

Quesnel, V. C., 444, 445, 448

R

Rabideau, G. S., 173, 175, 460
Rabin, B. R., 113
Rabinowitch, E., 453, 454, 456, 467
Rabinowitz, J. C., 81, 93
Rabson, R., 135, 249
Racker, E., 109, 112, 128, 136
Racusen, D. W., 6, 27
Rad, M. R. R., 329
Radley, M., 314
Raghavan, V., 261
Ragland, J. L., 174
Rahat, M., 49
Rains, D. W., 179
Rajháthy, T., 243
Ram, H. V. M., 249
Ram, Y., 249
Ram, Y., 249
Ram, Y., 249
Ramachandran, S., 340
Ramaswamy, M. S., 444
Ramirez, J. M., 65, 66, 67
Ramshorn, K., 212
Ramstad, E., 143–68; 154, 155, 156, 157, 161
Randall, P. J., 174
Ranjan, S., 123, 445, 446
Ranson, S. L., 121, 330
Rao, D. R., 150

Rao, P. N., 173 Raper, J. R., 335 Raper, K. B., 336, 337 Rapoport, H., 143, 149, 156 159, 161 Rappaport, L., 203, 204, 309, 311 Rasmayev, I. I., 369, 373 Rasmusson, D. C., 175 Rathschüler, E., 348 Ratner, E. I., 364 Rauh, W., 243 Rautanen, N., 68 Rawitscher-Kunkel, E., 49 Rawlins, T. E., 289 Ray, P. M., 425 Rayes, E., 340 Rayns, D. G., 48 Rebeiz, C. A., 310, 313, 314, 320 Reed, H. C., 367 Rees, H., 174 Reeve, R. C., 423 Reeves, H. C., 39, 40 Rege, D. V., 42 Rehner, G., 355 Reich, K., 49 Reid, W. W., 446, 448 Reimers, F. E., 205, 206 Reinbothe, H., 147 Reisigl, H., 354 Reith, J. W. S., 428, 434 Remy, P., 203 Renner, O., 246, 261 Resühr, B., 198 Reusche, W., 149 Reuter, G., 146, 147 Reuther, W., 179 Richards, F. J., 242, 244 Richards, L. A., 414, 417, 418, 419, 423, 425 Richards, S. J., 426 Richardson, K. E., 116, 129, 130 Richardson, S., 5 Richardson, S. D., 202 Richardson, S. H., 5 Richmond, A. E., 24 Richmond, P. T., 203, 204 Richmond, T. R., 413 Richter, F. I., 261 Richter, G., 118 Riddell, J. A., 273, 278, 279, 280, 293 Rider, N. E., 414 Ried, A., 62 Rier, J. P., 232 Riggio-Bevilacqua, L., 273, 285 Rijven, A. H. G. C., 59 Ringler, R. L., 146 Ririe, S., 428 Rittenberg, S. C., 50 Rittingshaus, P., 259 Ritzel, M., 314 Rixon, A., 435 Roach, J., 281, 283, 295, 297 Robbins, W. J., 246, 248 Robbins, W. W., 198 Roberts, E. A. H., 443 444, 448 Roberts, J. B., 445, 448 Roberts, R. H., 306 Robertson, J. D., 1 Robertson, R. N., 304 Robinson, B. J., 319, 321 Robinson, E. L., 44 Robinson, P. M., 208, 211 Robinson, R., 143, 159 Robinson, R. R., 174 Robson, J. E., 332, 333 Rodman, J., 48 Rodriguez-Lôpez, M., 45 Rodrigues Pereira, A. S., 256 Roelofsen, P. A., 328, 335, 444, 445 Roemer, T., 260 Roesch, E., 445 Rogers, W. P., 329 Rolik, R. P., 260 Rollin, P., 202 Romano, A. H., 332 Romano, C. A., 75 Rømcke, O., 43 Romeike, A., 144, 146, 159 Ronkin, R. R., 171 Rood, P., 319 Rosano, H. L., 4 Rosen, W. G., 263 Rosenberg, A. J., 121, 445 Rosenberg, L. L., 127 Ross, C. W., 28 Rotfarb, R. M., 355 Rouffa, A. S., 227, 228 Roussos, G. G., 59, 61 Rowan, J. D., 464 Rowley, J. R., 256, 257 Roy, S. B., 77 Ruck, H. C., 177 Ruhland, W., 212 Rumber, B., 466 Rumberg, E., 389 Runeckles, V. C., 138 Russell, E. W., 423, 426 Russell, M. B., 420, 423 Rutschmann, J., 155, 156 Rutschmann, J., 1 Rutter, A. J., 412 Ruttle, N. L., 260 Ryser, G. K., 177 Ryther, J. H., 42, 62

S

Sabinin, D. A., 213, 364
Sachar, R. C., 309, 312, 314
Sachs, J., 189
Sachs, R. M., 281, 283, 295, 297
Safferman, R. S., 46
Sakaki, T., 33
Salisbury, F., 346, 348

Salisbury, F. B., 29, 31 Sallach, H. J., 131 Saltman, P., 4, 127, 280, Salton, M. R. J., 328, 333 Salvin, S. B., 330 Samborski, D. J., 24 Samish, R. M., 185, 208 Samuels, G., 426, 432 Sanford, W., 428 Sanio, K., 235 Sankawa, Y., 145, 149 Sano, Y., 203 San Pietro, A., 64, 67, 81, Sansten, E. P., 260 Sapper, I., 367 Saris, N. E., 57 Sarkar, S., 33 Sartoris, G. B., 259, 260, 410 Sarycheva, A. P., 378 Sasa, K., 444 Sasaki, K., 126, 137 Sassaki, H., 41 Sastry, A. S., 446 Sastry, K. K. S., 311 Sastry, P. S., 10, 11 Satarova, N. A., 194, 212, 213, 214, 369 Sato, C. S., 146 Satoh, K., 60, 66 Satoo, T., 348 Sauberer, F., 351 Sauberlich, H. E., 400, 401 Saunderson, J. L., 457 Savelkoul, R. M. H., 228 Sax, K., 236 Scagel, R. F., 37 Scawin, J. H., 58 Schachman, H. K., 89 Schade, C., 260 Schader, E., 209 Schäfer, C., 145, 149 Schaffalitzky de Muckadell, M., 242, 246, 248 Schander, H., 189, 190, 306 Scherbaum, O. H., 37 Scherf, H., 153 Scherff, R. A., 282, 297 Schiedt, U., 151 Schiessl, R., 353 Schiff, H., 4 Schiff, J., 47 Schildknecht, H., 263 Schlesinger, A. H., 278 Schleyer, H., 77 Schmid, G., 145, 146, 152 Schmidt, A., 227 Schmidt, E., 352 Schmitt, F. O., 328 Schmucker, T., 261, 262 Schnarf, K., 255 Schneider, G., 263 Schneider, R., 243 Schoch-Bodmer, H., 256, 257, 261, 262

Scholander, P. F., 425 Scholösser, K., 258, 264 Schomer, H. A., 464 Scopf, C., 145 Schopfer, W. H., 332 Schou, L., 101, 103, 107, 110, 116 Schoute, J. C., 236, 241 Schramm, R., 243 Schrauwen, J. A. M., 256, 264 Schrift, A., 40 Schröder, C. A., 304 Schröder, C., 345 Schröder, H. B., 144 Schröder, W., 129 Schtrausberg, D. V., 428 Schubert, J. E., 391 Schubiger, G. F., 445 Schuler, J. F., 59 Schulman, J. H., 1, 2, 4 Schultz, J., 50 Schultz, S. G., 171 Schürer, K., 145, 148 Schüte, H. R., 25 Schütte, H. R., 143, 145 149, 150, 151, 155, 318 Schutz, R. S., 147 Schwabe, W. W., 205, 206 Schwanitz, F., 256 Schwarting, A. E., 153 Schwarzenbach, F. H., 261 Schwerzenbach, F. H., Schwemmle, B., 368 Schwertz, F. A., 8 Scott, G. T., 397 Scott, K. J., 447 Scott, W. R., 403 Seakins, J. W. T., 448 Seale, L. M., 387 Seaton, J. C. 204, 315 Seaton, J. C., 204, 315 Seay, W. A., 174 Segal, R., 281 Segel, I. H., 171 Seidman, G., 288 Sell, H. M., 309 Semenenko, V. E., 405 Sen, S. P., 20 Senez, J. C., 64 Senn, G., 345 SentheShanmuganathan, S., 328 Sergejew, L. I., 364 Servettaz, O., 125 Setterfield, G., 22 Seybold, A., 364 Shafer, J., 59, 62 Shaffer, B. M., 336, 337 Shakhov, A. A., 405 Shanks, J. B., 286 Shannon, L. M., 123, 131 Shantz, E. M., 303, 315 316 Shantz, H. L., 422 Sharpe, J., 462 Shatkin, A. J., 331 Shaulis, N. J., 306, 307, 308, 316, 428, 429, 430

Shaw, H. R., 420, 421 Shaw, M. J., 337 Shear, C. B., 428 Shefner, A. M., 400, 401 Sherman, G. D., 435 Shibata, K., 74, 75, 109, 112, 117, 455, 468 Shibata, S., 144, 145, 146, 149, 158 Shibuya, I., 11 Shigeura, G., 411, 412, 415, 418, 420, 430 Shimogawara, G., 199 Shirodkar, A., 154 Shive, J. W., 421 Shive, W., 202 Shkolnik, M. Ya., 113 Shlyk, A. A., 8 Shorrocks, V. M., 428, 429, 431, 434 Shrift, A., 169, 335 Shturbanova, E., 68 Shu, P., 340 Shull, G. H., 244 Sibatani, A., 28 Sideris, C. P., 428 Sidwell, A. P., 464 Siegelman, H. W., 200, 451, 464, 466 Silberger, J., Jr., 20 Silver, W. S., 59, 62, 68 Simmerman, N. L., 273 Simmonds, N. W., 303, 306 Simmonds, S., 281 Simon, E. W., 3 Simon, H., 149, 151, 153, 155 Simpson, G. M., 185, 202 Sinclair, W. B., 176 Singer, S. J., 112, 113 Singh, R. N., 46 Sinnott, E. W., 225, 235, 241 Sipal, Z., 155 Sisakyan, N. M., 125, 364, 365, 366, 367 Sison, Y., 331 Sitnikova, O. A., 212 Sitte, P., 257 Sitte, P., 257 Sjöstrand, F. S., 2, 256 Skazkin, F. D., 364, 375 Skene, K. G. M., 314 Skinner, C. C., 202 Skinner, C. E., 332 Skobeleva, N. I., 444 Skoog, F., 18, 20, 315, 316 Slatyer, R. O., 414, 419, 421, 422, 424, 425 Slautterback, D. B., 10 Slifkin, M. K., 337 Smayda, T. J., 38 Smillie, R. M., 40 Smit, P., 244 Smith, D. C., 44, 45, 109 Smith, D. C. C., 157 Smith, D. E., 202 Smith, G. H. C., 352

Smith, H., 155, 157 Smith, J. H. C., 74, 75, 455 Smith, L., 76, 86 Smith, L. H., 175 Smith, O., 204, 205, 206, 208 Smith, P. F., 179 Smith, R. H., 331 Smith, R. L., 177 Smith, S. N., 173 Smithies, W. R., 148 Snaydon, R. W., 180 Snow, A. G., 260 Snow, M., 229, 233, 238, 239, 241 Snow, R., 229, 238, 239, Snyatinovskaya, O. F., 205 Sobotka, H., 43, 37, 52 Soeder, C. J., 45, 62 Sohm, H., 350, 351, 352 Solberg, R. A., 235 Solderstrom T. R., 123 Soli, G., 50 Solomon, A. K., 171 Solt, L. M., 147, 149 Solt, M. L., 208 Soma, K., 230, 232, 233, 237, 240 Someroski, J. F., 150 Sonneborn, D. R., 336 Soost, R. K., 310, 312 Sorokin, C., 43, 329, 394, 395 Sorokin, S., 232 Sosa, A., 258 Sosa-Bourdouil, C., 258 Sossountzov, L., 247 Soucek, M., 149 Spath, H. L., 197 Specht, A. W., 179 Spector, W. S., 397 Spencer, D., 57, 59, 61, 68 Spenser, I. D., 144, 147, 150 Spenser, J. D., 145, 151, 152 Spicer, P. B., 202 Spomer, G., 346, 348, 349, Sprague, G. T., 410 Sproul, M., 40, 169 Sreenivassan, A., 42 Srivastava, S. K., 137 Stafford, H. A., 131, 132 Stahly, E. A., 307, 308, 313, 320 Stahmann, M. A., 447 Stanhill, G., 418 Stanier, R. Y., 73, 74, 75, 87, 89, 96, 333 Stanishevskaya, E. M., 8 Stanley, R. G., 258, 260, 261, 262

Stark, S. M., Jr., 174 Stárka, J., 59 Starr, R. C., 46 Staub, R., 47 Stauffer, J. F., 65, 82, 87 Stearns, F., 195, 199 Steenberg, K., 109, 112, 117 Steenbjerg, F., 428 Steeves, T. A., 240, 241, 247 Steffen, K., 257, 262 Steglich, W., 159 Stein, J. R., 37 Steiner, M., 352 Steinmann, E., 6 Stepanovich, K. M., 131 Stephens, R. L., 447 Stephens, S. G., 245 Stepka, W., 101, 103, 107, 110 Sterling, C., 304 Stermitz, F. R., 143, 149, 158, 159, 161 Stern, H., 255 Stevens, H. M., 59 Stevenson, G. C., 410 Steward, F. C., 225, 231, 242, 249, 303, 315, 316 Stewart, I., 209 Stewart, W. D. P., 46 Stewart, W. S., 305, 306, 318 Steyn, W. J. A., 429 Stiffer, L., 329 Stiller, M., 101, 102, 105, 106, 109 Stinson, H. T., 258, 446 Stinson, H. T., Jr., 126 Stockeler, J. H., 418 Stocker, O., 348, 364, 365, Stocking, C. R., 2, 125, 127 Stockley, H. M., 333 Stoeckenius, W., 1, 2 Stokes, G. W., 173 Stokes, P., 185, 211 Stoll, N. R., 333 Stolzenbach, F. E., 81 Stone, C. J., 260 Storey, W. B., 177 Stout, A. B., 310 Stout, M., 177 Stout, P. R., 169 Stoutemyer, V. T., 246, 248 Stoy, V., 59, 67 Straub, J., 264, 265 Street, H. E., 59 Strickland, E. H., 10 Strominger, J. L., 333 Strong, F. M., 315, 316 Stross, R. G., 43 Stuart, N. W., 204, 272, 279, 280, 281, 283, 284, 286, 290, 292, 293, 303, 309, 318 Stumpf, P. K., 12, 42, 66, 127, 150 Subbotina, N. V., 366

Sudia, T. W., 318 Sudyina, E. G., 8 Sugimura, T., 93 Sugiura, M., 25, 27 Sugiura, M., 446 Suhadolnik, R. I., 153 Suhadolnik, R. J., 145, 152 Suhr, K. A., 260 Sullivan, C. J., 364 Sumiki, Y., 204 Sun, L. S., 391 Sundene, O., 51 Sunobe, Y., 24 Sussex, I. M., 230, 238, 239, 240, 241, 244, 245 Sussman, M., 336, 337, 338, 340 Suter, P. J., 204, 315 Suzuki, N., 63, 64 Swain, T., 445 Swanson, C. A., 318 Swanson, C., 178 Sweeney, B. M., 37 Sweep, G., 79 Swezey, J. A., 420, 421 Sybesma, C., 75, 77, 78 Syrett, P. J., 39, 57 59, 63, 124 Szarkowski, J. W., 446 Szeicz, G., 414 Szteyn, K., 266 Szweykowska, A., 247

T

Taber, W. A., 153, 332 Tagawa, K., 66, 79, 80, 81, 85, 86, 92 Tager, J. M., 202 Takahashi, H., 57, 59, 61 Takahashi, M., 425 Takata, K., 22, 23 Takats, S. T., 255, 257 Takhtajan, A. L., 242 Takino, Y., 44, 448 Talbert, F. D., 202 Talling, J. F., 38 Talmage, D. W., 265 Tam, K. L., 144, 157 Tamiya, H., 40, 335, 400 Tamm, C. O., 414, 428, 434 Tanada, T., 414 Tanaka, T., 199 Tang, P. S., 59 Taniguchi, S., 57, 59, 63, 66, 68 Tanimoto, T., 421 Tanner, C. B., 414, 421 Tanner, H. A., 39, 130, 397 Tanner, K. G., 340 Tashima, Y., 33 Tatebe, T., 263 Tatewaki, M., 51 Tatum, E. L., 327, 328, 331 Taylor, E. H., 155

Taylor, J. B., 161 Taylor, J. H., 255
Taylor, J. J., 332
Taylor, J. W., 200
Taylor, R. L., 290, 292 Taylor, S. A., 418, 420, 425 Taylor, W. I., 153 Tchan, Y. T., 47 Teas, H., 169 Tepper, H. B., 227, 228, 249 Teraoka, H., 32 Tetlow, K. S., 453 Teubner, F. G., 308 Than-Tun, 66
Thielebein, M., 202
Thimann, K. V., 25, 46, 138 Thomas, A. F., 144, 146 Thomas, G. M., 159 Thomas, J. B., 74 Thomas, M., 121 Thomas, T. H., 208, 211 Thomas, W. H., 38 Thomas, W. H., 38 Thomas, W. I., 174 Thompson, A. H., 307, 308, 313, 320 Thompson, H. C., 205, 206 Thompson, J. F., 43, 59, 62, 231 Thompson, P. A., 203, 317 Thompson, R. C., 198, 201, Thomson, W. W., 2, 3, 4 Thornthwaite, C. W., 413, 415, 423 Thornton, N. C., 185, 196, 197, 211 Thorup, S., 203 Tiessen, H., 287 Tiffin, L. O., 172, 176, 434 Timasheff, S. N., 257 Timm, H., 203
Timmis, G. M., 43
Tirpack, A., 82, 88, 95
Titman, P. W., 248
Todd, G. W., 217 Todd, G. W., 317 Tolbert, N. E., 101, 103, 107, 110, 116, 127, 129, 130, 133, 135, 136, 208, 273, 277, 278, 279, 280, 281, 283, 285, 286, 287, 288, 289, 290, 292, 293, 294, 295, 296, 297, 311 Tomaszewski, M., 211 Tomita, T., 33 Tomova, N., 68 Tonolo, A., 153 Toole, E. H., 198, 200 Toole, V. K., 185, 197, 198, 200, 202 Towler, D. A., 337 Tranquillini, W., 345-62; 346, 347, 348, 351, 352, 353, 356, 358 Treble, D. H., 122

Trebst, A. V., 82, 87 Treharne, R. W., 130 Trewartha, G. T., 345 Trimm, H., 203 Trinkaus, J. P., 329 Trocme, S., 428 Troll, C., 345 Troll, W., 242, 243, 244, 245 Trumbull, E., 151 Trurnit, H. J., 9 Ts'o, P. O. P., 17, 32, 112, 113 Tso, T. C., 149 Tsukamoto, Y., 203, 208, 304, 305 Tsvetkova, I. V., 369, 371, 372, 378, 380 Tucker, S. C., 241
Tufts, W. P., 191
Tukey, H. B., 200, 202,
207, 304, 305, 306
Tulecke, W. R., 260 Tupý, J., 258, 262, 264 Turesson, G., 169, 180 Turian, G. F., 327 Turing, A. M., 237 Turner, H., 346, 347, 348, 349 Turner, J. F., 332 Tutihasi, H., 202 Tuttle, A. L., 89 Tweet, A. G., 9 Twyford, I. T., 428 Tyler, K. B., 428, 429, 430 Tyler, V. E., Jr., 153, 155, 157

U

Ukeles, R., 41 Ullah, Md. R., 444 Ullrich, H., 212, 355 Ullrich, J., 131 Ulmer, W., 353 Ulrich, A., 177, 410, 412, 428, 429, 430, 431, 434 Ulybina, G. I., 369 Umbreit, W. W., 65, 82, 87 Umemura, K., 25, 28, 446 Uphaus, R. A., 44 Usami, S., 32

v

Vaartaja, O., 199, 202, 353
Vaccaro, R. F., 62
Vaidja, V. G., 177
Vaidyanathan, C. S., 59
Vaitekunas, A. A., 446, 447
Vakil, J. R., 329
Vaklinova, S., 68
Valentine, R. C., 64, 67, 81, 93

Vallee, B. L., 43 Van Baalen, C., 46 van de Hulst, H. C., 453 Vandenheuvel, F. A., 11 van der Veen, R., 205, 208 Vanecko, S., 66 van Niel, C. B., 73, 74, 76, 78, 88, 91, 333 Van Noort, G., 113, 117 van Overbeek, J., 3, 272, 280, 303, 305, 309 Van Rij, N. J. W., 330 Van Schouwenburg, J. C., 428 Vareschi, V., 350 Varga, M., 208, 316 Varner, J. E., 22, 66, 445, 446 Varner, J. F., 24 Varner, J. F., 24 Váróczy, E., 261, 262 Vasil, I. K., 255, 256, 261 Vasilyeva, N. G., 364 Vatter, A. E., 3, 9, 22 Veale, J. A., 247 Vegis, A., 185-224; 185, 188, 189, 190, 191, 193, 194, 195, 196, 197, 200 194, 195, 196, 197, 200, 204, 205, 206, 211, 212 Veihmeyer, F. J., 305, 419 Veldstra, H., 3 Verhoeven, W., 68 Verloop, A., 40 Verloop, A., 40 Vernon, L. P., 73-100; 76, 78, 79, 80, 81, 83, 85, 88, 94, 95, 389 Viart, P., 445, 446 Vicart, H., 257 Vickery, H. B., 122, 128, 133, 445 Viets, F. G., Jr., 175 Viglierchio, D. R., 412 Villiers, T. A., 185, 208
Villiers, T. A., 185, 208
Vining, L. C., 153
Virgin, H. I., 2, 4, 7, 8
Virtanen, A. I., 68
Vishniac, W., 47, 102, 110, 333 Visser, D. W., 62 Visser, T., 189, 190, 196, 197, 200, 258, 259, 260, 261, 262 Vladimirova, M. G., 405 Vlasenok, L. I., 8 Vöchting, H., 248 Vogel, H. J., 265 Volkmann, D., 40 Volkova, A. A., 206 Volodin, V. I., 202 von Guttenberg, H., 208, 226, 231, 236 von Portheim, L., 197 von Saltza, M. H., 315, 316 von Seybold, A., 460 von Stosch, H. A., 44, 51 von Veh, R., 201

von Wettstein, D., 2, 4, 7, 8

Voronina, I. N., 372, 378 Vose, P. B., 169, 174, 175 Voskresenskaya, N. P., 64, 66, 67 Voth, P. D., 195, 197 Votednberg, W. J., 75 Vuataz, L., 443, 444

#### w

Wacker, W. E. C., 43 Waddington, C. H., 225 Wadleigh, C. H., 178, 418, 423, 424 Wadsworth, H. A., 420 Wagenitz, G., 256 Wagner, R. P., 169 Wain, R. L., 305 Walderdorf, M., 261 Walker, D. A., 121, 124, 330 Walker, D. R., 202, 203, 209 Walker, H. M., 425 Walker, R., 229 Walker, R. B., 180, 425 Wall, J. R., 172 Wallace, A., 172, 177, 434 Wallace, T., 174, 175 Wallenstein, A., 248 Waller, G. R., 151 Walsh, T., 174 Walter, H., 349, 351, 364, 377, 423 Wang, D., 135 Wang, J. Y., 413, 414 Wangermann, E., 246 Warburg, O., 62, 63, 65, Ward, J. M., 332 Ward, J. M., 332 Wardlaw, C. W., 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 236, 237, 238, 230, 241 238, 239, 241 Wareing, P. F., 185, 195, 199, 200, 204, 205, 206, 207, 208, 210, 211, 242, 248, 285, 286, 356 Warren Wilson, J., 235, Warren Wilson, P. M., 235 Wassink, E. C., 74, 75, 88 Watabe, N., 49 Watanabe, A., 46, 47 Waterhouse, A. D., 417, 419, 420 Watson, G. A., 431 Watson, P. J., 169, 180 Watson, R. H., 40 Waxman, S., 205, 206, 207, 208 Waygood, E. R., 135 Weaver, H. A., 421 Weaver, L. R., 417, 419 Weaver, R. J., 204, 305, 306, 309, 310, 312, 318 Weaving, A. C., 445, 446

Weber, F., 1 Weber, P., 6 Webster, G., 17 Webster, G. C., 57 Weeks, T. E., 23 Weenink, R. O., 6, 11 Wehsarg, O., 189, 193, 195 Weil, L., 272, 275, 279 Weinberger, J. H., 191 Weinlaud, H., 255 Weinstein, L. H., 446 Weis, D., 137 Weiss, F., 193 Weiss, M. G., 171 Weiss, V., 149 Weissbach, A., 112, 113 Weissweiller, A., 460 Weldon, G. P., 191 Weller, L. E., 309 Welzel, G., 255, 256 Wender, S. H., 447 Wendt, H. J., 153, 155, 157 Went, F. W., 170, 185, 189, 190, 196, 412, 413 Werfft, R., 260
Wesson, L. G., 131
West, C. A., 204, 272, 303, 314, 317
West, S. H., 20 Wetmore, R. H., 225, 227, 229, 231, 232, 233, 241, 244, 245, 247, 248, 249 Wetter, C., 243 Wetter, L. R., 133, 243 Wetter, L. R., 103, 210 Wettstein, W., 256 Weurman, C., 449 Weybrew, J. A., 445, 447 Weygand, F., 149, 150, 151, 153, 155, 157, 161 Whaley, W. G., 173, 175 Whatley, F. R., 66, 67, 81, 89, 92, 127, 134 Wheaton, T. A., 281, 282, 289, 295 Wheeler, A. W., 446
White, A. M., 42
White, G. J., 336, 337, 338
Whitehouse, W. E., 260
Whiteley, H. R., 64, 67 Whittier, D. P., 240 Whittingham, C. P., 39, 116, 129, 130 Whitton, B. A., Wiebalk, U., 255 Wiechmann, H., 45 Wier, T. C., 4 Wier, T. E., 2, 3 Wiessner, W., 40, 41 Wiggans, S. C., 290 Wilbur, K. M., 49 Wildman, S. G., 112, 113, 446 Wildman, W. C., 144, 152, 161 Wilkins, D. A., 180 Wilks, S. S., 391

Williams, A. H., 447 Williams, A. M., 83 Williams, C. H., 174 Williams, G. R., 127, 451, 464 Williams, I. H., 248 Williams, M. W., 284, 291 Williams, P. C., 174 Williams, R. F., 24 Williams, W. O., 306 Willis, J. E., 131 Wilson, A. T., 101, 102, 103, 107, 108, 109, 110, 115, 116 Wilson, C. M., 19 Wilson, D., 309 Wilson, D. G., 123 Wilson, G. L., 412 Wilson, P. W., 59 Wing, R. E., 146 Winkler, A. J., 309 Winkler, E., 347, 354, 355, 356 Winkler, E. J., 333 Winkler, K., 149, 150, 153, 161 Winter, J., 157 Wintermans, J. F. G. M., 6, 10, 11 Winters, E., 425 Winters, H. F., 321 Wirwille, J. W., 272, 275, 279, 297 Wiser, R., 6, 10, 11 Wiśniewska, J., 212 Witsch, H. V., 45 Witt, H. T., 389, 451, 466 Wittwer, S. H., 213, 283, 285, 286, 287, 293, 294, 295, 309, 311 Wolf, A. P., 149 Wolf, F. T., 11 Wolfe, R. S., 64, 67 Wolfe, W. C., 277, 280 Wolinsky, J., 161 Wolken, J. J., 8 Wollgiehn, R., 26 Wong, S., 156 Wood, E. J. F., 46 Wood, J. W., 277, 280 Wood, R. A., 414 Wood, W. A., 135, 136 Woodard, J. W., 255 Woodbridge, C. G., 434 Woodhams, D. H., 413 Woods, D. D., 64 Woodstock, L. W., 18 Woodward, J. R., 258 Woolf, A. A., 3 Woolfolk, C. A., 64, 67 Wright, B. E., 65, 335, 336, 337, 338 Wright, D. E., 330 Wright, H. E., 446, 447 Wright, K. E., 423, 435 Wright, S. T. C., 31, 305, 307, 308, 311, 316, 317

Wrigley, G., 409, 410, 414 Wu, H. Y., 59 Wu, P.-H., 150 Wu, W. C., 387 Wunderlich, R., 255 Wustenfeld, D., 332

Y

Yager, R. E., 320
Yagi, J., 11
Yagi, M., 208
Yagi, T., 9
Yamafuji, K., 58, 59, 60, 61, 68
Yamaha, G., 255
Yamamoto, Y., 26, 124
Yamana, K., 28
Yamanishi, Y., 444
Yamasaki, M., 146, 158
Yamashita, J., 80, 92, 94
Yamashita, S., 33
Yanagita, T., 340
Yang, C. C., 462, 463
Yang, C. C., 46, 463
Yang, C. C., 47, 447
Yang, L., 389

Yeatman, J. N., 464
Yocum, C. S., 88
Yokota, M., 40
Yoshimura, F., 66
Youker, R. E., 421
Young, B. S., 234
Young, H. Y., 428
Young, J. L., 24
Young, J. O., 304, 305
Young, L. C. T., 258, 262
Young, R. H., 123, 131
Young, R. S., 305
Yuidin, V. G., 196, 211

Z

Zabluda, G. V., 364, 374
Zacharius, R., 446, 447
Zahalsky, A. C., 40, 41
Zahl, P. A., 41
Zalenskij, O. V., 356, 357
Zalenskij, V., 243
Zalokar, M., 331
Zatykò, J. M., 309
Zaugg, W. S., 78, 79, 82, 88, 94, 95
Zauralov, O. A., 369

Zbinovsky, V., 445
Zeevaart, J. A. D., 27, 30, 282, 285, 286, 294, 296, 297
Zeijlemaker, F. C. J., 263
Zelitch, I., 121-42; 125, 128, 129, 132, 133, 134, 136, 445, 446, 447
Zelniker, J. L., 213, 214
Zenk, M. H., 153
Zusschke, F., 257
Zholkevich, V. N., 366
Ziffer, H., 43
Zill, L. P., 9, 11
Zilliken, F., 333
Zimmerman, P. W., 206
Zimmermann, W., 244
Zinger, N. V., 257
Zoré, S. V., 133
Zucker, M., 61, 126, 446
Zuhadolnik, R. J., 152
Zukel, J. W., 271, 272
Zulalian, J., 152
Zulalian, J., 152
Zulalian, J., 152
Zulalian, J., 152

# SUBJECT INDEX

A

Abscission

fruit, 308 hormones, 318-20 Absorption coefficient, 453, 459, 460, 467 mechanism in root, 179 mineral, 178-79, 373, 379 spectra, 451-56, 460-69 spectroscopy, 451-70 water, 423 Acacia, 243-44 Accessory tissue, 304 Acer pseudoplatanus, 122 207, 210 Acer rubrum, 357 Acetaldehyde, 213 Acetate, 39-41, 88, 124, 127, 143, 150, 154-55 Acetate-kinase system, 40 Acetic acid, 147, 444 Acetids, 145, 154, 161 Acetoacetate, 147-49, 155, 161 Acetyl Co-A, 12, 122, 211-13 Achenes, 306 Achillea borealis, 180 Acid anhydrides, 118 Acid soils, 180, 433 Aconitase, 122, 134 Acrasin, 355-56 Actinic beam, 466-67 Actinomycin D circadian rythms, 31 Activated sludge, 404 Acytostelium leptosomum, 336 Adaptive enzyme, 59-60 Adenine, 18, 24-25, 33, 80, 215, 296, 372 Adenosine, 215 ADP, 91 AMP, 215 ATP, 20, 28, 73, 82-84, 87-89, 95, 112, 114, 116, 131, 261 S-adenosyl-L-methionine, 158 Adenostyles albifrans, 358 Adenylic acid, 26, 32 Adventitious bud, 232, 243 Adventitious roots, 353 Aeroallergens pollen as, 256

Aerobacter aerogenes antipurine extract, 43 Aesculus woerlitzensis, 315 After rest buds and, 188 potato sprouting, 194 After ripening, 189-90, 195, 200-4, 214-15
Ageing, 368, 404, 432 effects of, 245, 248 growth and, 411, 415-16 Agroclavine, 146, 153, 156, 161 Agropyron desertorum, 178 Agrostis spp, 279 Agrostis tenuis lead tolerance in, 180 Abies alba seasonal growth in, 352 Air-curing tobacco, 446-47 Air pollutants plant sensitivity to, 288 Aimaline synthesis, 153, 158 Alanine, 27, 109, 111, 146, 150, 264 Alanine-hydroxypyruvate transaminase, 131 Alaska pea, 282, 289 Albumins, 258, 380 Aldehyde oxidase, 68 Aldehydes tea aroma and, 444 Aldolase, 109-10, 114 Algae, 52, 59, 327, 329, 336, 389, 394, 397, 400, 405 cell wall, 327-28, 400 closed system culture, 403 food source as, 400-4 gas exchange and, 396 morphogenesis in, 327-44 photosynthetic, 37-56 sewage treatment and, 391 symbiosis in, 44-45 nutrition, 37-56, 396-97, 404 Alkaline soils, 423-24, 433 Alkaloid biogenesis, 143-68 Allele, 265 Allantoin, 43 Allium ascalonicum, 206 Allium proliferum, 206 Allomyces, 355 Allophycocyanin absorption maximum of, Allum sativum, 206

Allyltrimethyl ammonium bromide, 280, 286 AMAB growth retardants, 280, 285-87 Almond, 178, 310, 314 Aloe saponaria, 123 Alpine plants, 345, 354, 359-60 Aluminum, 176, 179, 428 oxide, 456 sulfate, 435 toxicity, 435 Amaranthus caudatus, 198 Amaranthus gangeticus, 402 Amaryllidaceae alkaloids, 145, 152, 161, 164 Amides, 40, 370-71, 443, 446 Amine oxidase, 147-48 Aminoacetophenone, 158 Aminoacid decarboxylase, 145 Amino acid phosphates in photosynthesis, 113 Amino acids ammonia and, 258, 262, 264-65, 372, 381, 400-2, 443, 446, 448 alkaloid biogenesis, 144, 145, 161 chemotropism and, 263 flower induction, 33 oxidative deamination, 444 synthesis, 102, 121, 133, 231 Amino aldehyde Mannich condensation, 146 p-aminobenzoic acid, 40 y-aminobutyraldehyde, 148 γ-aminobutyrate, 43, 148, 264 6-aminofurfurolpurine, 372 see also Kinetin α-aminoisobutyric acid, 25 Aminopterin 3-Aminovaleraldehyde, 148 Ammonia assimilation, 59, 62, 332 heat injury and, 368-69, 382 nitrate metabolism, 59 secretion, 373 synthesis, 372-73 tobacco curing and, 446 toxicity, 368-69, 381 Ammonium oleate, 8

Ammonium sulfate, 131-33, 136 AMO-1618, 209, 273-83, 285, 288-93, 296-97 Amehae flagellated, 37, 335 Amphibious plants, 248 Amphidinium carterae, 50 Amphidinium rhyncocephalum, 50 Amplified P index, 428, 433, 435 Amylase, 260 Amytal, 90 Anabasine, 144-45, 148-49, 151 Anabolism, 445 Anabaena cylindrica, 46, 62-Anaeardium accidentale, 301 Anacystis, 37 Anacystis nidulans, 44, 47 138 Anaerobic bacteria, 404-5 metabolism, 130, 213, 262 nitrate reduction, 63 nitrite reduction, Ananas comasus, 304 Angiosperm flower, 237 Angiosperms closed system and, 401-2 Animal tissue absorption spectrum of, 466 Ankistrodesmus braunii, 60-68, 135, 137 Annual growth increment ageing and, 248 Annual rhythm frost resistance, 353 Anthers, 255, 375 Anthesis, 286, 304, 309 Anthocyanin, 257, 294, 445, Anthoxanthins, 257 Anthranilic acid, 145, 149, 153-54, 161 Antiauxin, 46, 210, 297 Antibiotics, 45, 392, 436 see Actinomycin D Antibody formation, 265 Anticlinal division, 227 Antigen microsomal, 31 Antigen-antibody reactions pollen-tube and, 264 Antigibberellins, 296-97 Antimetabolites, 297, 299, 332 Antimycin A in photoreduction, 79-86, 94-95 Antipurine, 40 Anti-pyrimidine, 40 Antirrinum chloroplasts, 2 260 Antiserum, 31-32

Antithamnion plumula, 51 Antithamnion sarmiense, 51 Autotrophic plants, 391 Apex shoot, 227, 241 Apic bud, 200 cell, 227, 229-31 cone, 339 dome culture of, 231 dominance, 226, 229, 248, 241 growth, 210, 226-31, 244-45 initials in, 18 isolation, 230 meristem, 201, 226-28, 237, 239, 281, 294, 297 regeneration, 229-30, 232 transplants, 229-30 Apium graviolens, 172 Apoenzyme, 58 Apomyxis, 265 Aporogamy, 258 Appendages growth centers and, 238 Apple after-ripening, 202 auxin and, 305, 307, 309, 311, 320 cell division in, 304, 316 dwarfism, 200 gibberellic acid and, 204, 309, 312, 315 kinin-like activity in, 316 leaves RNA content of, 20 A.Q., 389-90 Aquatic plants, 233 Arabidopsis thaliana, 173, 202 Arabonic acid, 447 Aramanthus retroflexus germination, 193 Araucaria, 247 Arctostaphylos uva ursi, 353 Argentic ion stain for carbohydrate, 3 Arginine, 40 Arsenate as inhibitor and, 58, 62, 64, 114 Arsenite phosphate toxicity and, 44 Arthrobatrytis conoides, 333 Ascarids nemin cource, 333 Ascorbate, 75 photosynthesis, 76, 78, 83, 85, 91, 94 Ascorbic acid, 59, 61, 211 oxidase, 136-37, 447 Ascospores dormancy in, 340 Asexual budding, 391

Asparagopsis armata, 51 Asparagus officinalis, 228 Asparagine, 430, 446 Aspartate, 124, 127, 150, 215 Aspartic acid, 111, 331, 446 Aspergillus niger, 329 nitrite and, 62 Astasia longa, 50 Asterionella formosa culture, 50 Atmospheric radiation, 346 Athiorhodaceae, 41, 74 Auto exhaust plant sensitivity to, 288 Autoradiography, 18, 30, 255, 291, 332 Autotropism, 329 Auxin, 20-21, 24, 33, 207-10, 232-35, 255, 295, 299, 303-10, 313, 321 coconut milk, 315 differentiation, 234 diffusable, 295-299 dormancy and, 208 effects, 271 flowering and, 33 gibberellins and, 307 growth retardants and, 271 kinetin and, 316 morphogenesis and, 248 parthenocarpy and, 310, 319, 321 photoperiod and, 207 polar movement of, 320 protein and, 21, 24 structure of, 280 xylem differentiation, 235 Auxin-antogonist, 210 Auxin transport, 234-35, 319 Auxospore cycle, 37 Avocado, 304, 305 Avena curvature test, 273, 295 sativa, 20, 178-79 straight growth test, 295, Axillary bud, 238, 243, 245 8-azaguanine, 18, 27, 40, 33-34 Azalea, 284-85 Azobacter inhibition of nitrite reduction, 64

B

B 995, 275-76, 285 application 225, 297 dosage, 280 elongation, 294 flower initiation and, 283-84 growth retardant, 273, 278 283

specificity of, 279 structure, 285 translocation of, 291 see also N-dimethylaminosuccinamic acid Bacteria, 68 absorption spectra of, 466 algal culture and, 333, 393 carbon dioxide and, 329 ferredoxin, 64 heterotrophic, 74 hydrogenase activity, 67 nitrate reduction, 59, 63-64 photosynthesis in, 73-74, 78, 82-83, 86 pollen storage and, 260 potassium, 171 protoplasm, 397 waste and, 396, 399 Bacteriochlorophyll, 8, 73absorption, 74, 84 ATP production, 84 electron transfer, 76, 92-93 ferricyanide and, 75 photoreaction, 75, 81-82, 93, 95 photoreduction, 75, 88-Bacteriostat, 291 Banana fruit growth, 306 growth substances, 320 kinin-like substance in, 315 Banana fruit parthenocarpy, 303 Bangia fusco-purpurea, 51 Barley calcium deficiency, 4 endosperm test, 297 ion absorption, 175 growth retardant and, 279 Basal auricles, 243 Bean Amo 1618 and, 282, 293 gibberellic acid in, 315 growth retardants and, 272, 278, 280 water stress in, 288 water uptake, 27 Beech seeds after-ripening, 202 Beers law, 456 199 Begonia evansiana, Belladine, 158, 161 Bent grass, 279 Benzaldehyde, 152 Benzalkonium detergent, 47 Benzimidazole, 24-25 absorption spectrum, 459 Benzotropolone pigments, 444

Benzyl viologen, 65, 79 Benzyladenine-8-C14, 26 Benzyldimethyl (3, 5, 5, trimethylhexyl) ammonium benzene-sulfonate, 280 1-benzylisoquinoline alkaloids, 151 Benzylisoquinoline nucleus, 159 Berbine, 157 Beta vulgaris, 177, 243, 286 Betaine, 42, 146, 296 Betula spp., 193-94, 199 Betula pubescens, 210, 213, 214 Betula verrucosa germination temperature, 198 Bicarbonate, 105 morphogenesis and, 329sporulation and, 338-40 Bidens radiatus, 202 Binding hydrophobic, 12 Bioassays, 39, 321-22 Biochemical fuel cell, 403 Biogenetic law, 244 Biological clock, 31 Bioluminescence, 31 Bioregenerating system, 388, 399 food production by, 400 degree of closure, 403-4 Biotic complex, 409 Biotin, 50 algal culture, 38, 41 Birch, 210 2'2-bisflavanols, 444 Blackberry auxin and fruit size, 306 Black cornith grape, 310, 312, 320 Blastocladia britanica, 340 Blastocladia pringsheimii, 329 Blastocladulla emersonii, 338-40 Blastomyces dermatitidis RNA in, 332 Blossom set gibberellic acid in, 309 Blueberry growth, 305, 309 Blue-green algae humidity, 47 morphogenesis in, 333 nutrition of, 46 psychrophilic, 47 Blue light nitrate reduction and, 67 B-nine, 272 BOH effects of, 273-74, 285 growth retardant, 277 Borate

in chloroplast isolation, 125 Boron, 377, 434-35 deficiency mutant, 172 pollen germ and, 261-62 Bougainvillea, 136 Bound auxin, 307, 309 Bound enzymes, 260 Bound water, 369-374, 382 Bovine semen spectra of, 466 Brachyplast growth retardation of, 279 Bracts origin of, 236 phyllotary of, 249 Brain tissue spectra of, 466 Brambles tissue analysis, 428 Branches water in, 251-52 Branching, 226, 247 Brassica chinensis, 402 Brassica oleracea, Brassica rapa, 402 402 Broad bean actonitase in, 122 leaves phenolase in 136 phenolase in, 136 (2-bromoethyl)-ammonium chloride see BCC, 291 (2-bromoethyl) trimethyl ammonium bromide, 286, 289-90 see also BCB BCB growth retardant. 286, 289-90 BCC, 291 Browning reaction, 446 Bryophyllum, 123, 295-96 deagremontianium, 286 294 Bryophyt shoot, 226 Bryopses microfibrils in, 334 Bud abscission, 285 Bud break, 208 gibberellic acid in, 202-3 photoperiod effects, 199-200 temperature requirement, 189-204 Budding demorphic development, 330, 332-33 heat resistance and, 374 Bud dormancy, 185, 207-**Bud formation** kinetin and, 233, 238, 247, 259-60 Bud induction, 239 photoperiod, 204 rest, 185, 199

Bud scales, 209, 212
Bud temperature, 189, 191
Bulbils, 238
Bulbs
growth during rest period,
190
1-n-butyl-1-methylurea, 42
Butyrate
pyridine nucleotide reduction, 88
Bush bean leaves, 131

Cabbage leaves aconitase, 122 phosphatidic acid in, 10 Cabomba, 228 Caca leucocyanidin, 448 Cacao curing of, 444-45 Cacti metabolic acitivity, 369 Cadaverine, 145-49 alkaloid synthesis, 4 Caffeic acid, 446 Calcium, 4, 37, 431, 433, 435 carbonate, 435, 456, 459 chloride, 369, 380 deficiency, 4, 173 oxalate, 173 pollen germination and, 262 tolerant plants, 180 uptake, 176, 434 Calcium-potassium ratio, 178 Calcium silicates, 435 Calimyrna figs, 312, 321 Calvin cycle, 101 Calliopsis, 279 Callistephus chenensis, 279 Callose pollen tube, 264 Calluna vulgaris, 348, 352-53 Calothrix B<sub>12</sub> auxotrophs, 46 Cambial initial, 235 Cambiform cells, 234 Cambium AMO 1618 and, 282 differentiation, 234-36 flowering and, 285 growth promoting substances in 285 growth retardant and, 297 Camellia japonica flower initiation in, 284 Cannabis sativa floral initiation, 30 Canavanine, 151 Candida albicans, 332-33 Capillary potential, 425 Capsicum frutescens, 309 Carbocyclic rings in alkaloids, 154

Carbohydrate, 26, 121, 258, 366 accumulation, 248-50, 317-18, 413-16, 419 curing and, 431, 443-46 development and, 245, 249, 337-38 metabolism, 264, 366 nitrogen metabolism and. 63-65 storage, 358 transfer, 255, 261, 366 B-carboline moiety alkaloid synthesis, 153 Carbon alkaloids, 155, 157-58 exchange rate, 122 metabolism, 26, 121 nutrition in bacteria, 82 pyridine ring and, 150 Carbon dioxide, 26, 52, 103, 137-39, 390 alpine plants and, 354 development and, 329-33, 337 evolution, 356 fixation of, 38, 66, 73, 76, 79, 95-96, 101-20 nitrogen metabolism, 62, 63, 65 photosynthesis and, 87-88, 95-96, 110-15, 355, 414 pollen viability, 260 uptake, 115, 127, 348, 357-58, 414-15 ultraviolet light and, 359 Carbon dioxide pressure glycolate synthesis, 116, 129 Carbon monoxide, 44, 77 oxidases inhibition of, 137 Carbon to nitrogen ratio nicotinic acid synthesis, 150 Carbonyl accumulation, 447 Carbonyl trapping agent, 125 Carboxydismutase carbon fixation cycle, 112-13 Carboxylation carbon red cycle, 110-11, 118-19 glycolic acid synthesis, 128 Carex firma, 353 γ-carotene, 339 Carotene absorption spectroscopy and, 464 fluorescence of, 468 Carotenoidless mutants, 75-76 Caretonoids, 257, 312 Carpels, 241 auxin in, 306 growth inhibitors and, 317

Carrier mediated ion transport, 179 Carrot cell division in, 315-16 salt tolerance in, 178 Carvadan, 274, 276 Carteria turfosa, 42 Carvacrol Amo 1618 and, 276-77 Caryopsis germination in, 189 kinin-like substances, 315 Casein digests, 50 protein efficiency ratio, 400 hydrolysate, 41 Cashew fruit structure, 304 Castor bean ricinine in, 151 Catabolic degradation, 447 Catabolic tissues, 24 Catalase amineoidase and, 148 Amo 1618 and, 289 gibberellic acid effect and, 295 glycolate oxidase and, 133-34 Cataphylls, 236, 347 Catechins, 443-44, 448 curing and, 448 Catechol ixidase, 136, 446 Catechol type polymers, 444 Cation, 262, 370 binding in membranes, 4 exchange capacity, 179, 290 Cauliflower induction of nitrate reductase, 59 Caulobacter and nostoc growth, 47 Celery magnesium deficiency mutant, 172 Cell apex, 227-31 attraction, 335-40 auxins and, 307 carbon dioxide and, 329 differentiation, 378 division, 31, 271, 329 dwarfism and, 201 elongation, 18, 283 enlargement, 304, 306, 310, 313 enucleated, 31 factor, 315-16 fruit, 314, 316 fusion, 335-40 gibberellin and, 245-46 growth center and, 236-37 growth retardant and, 281-83 hardening and, 378

harvesting, 390

inhibition of, 294, 297 initiation, 227 kinin and, 315-16 lipids in, 3 organelles and, 256 parthenocarpy and, 310, 313 polarity, 33 sulfur metabolism and, 335 water and, 364 water deficiency and, 271, 332, 364 Cell numbers fruit, 305 parthenocarpy and, 313 Cell san frost hardiness and, 353 ultraviolet light and, 359 frost hardiness and, 288 fruit, 305 Cell wall, 249, 329, 331, 335-36 agal and, 327-28, 333-35, aspartic acid in, 331 carbon dioxide and, 329 loosening, 21 lysis, 336 metabolism and, 340 protein, 400 protoplasm and, 212 sulfur and, 332-33 Cellular metabolism, 328, 379 spectroscopy and, 463 Cellular morphogenesis cell wall and, 327-28 Cellular respiration, 445 tobacco, 440 Cellular slime mold, 335, 340 Cellulase, 401 Cellulose fibrils exine, 25 synthesis of, 337 Cellulose formation, 334 α-cellulose fraction, 400 Cellulose microfibrils, 334 Centaurea cyanus growth retardant and, 279 Central apical zone, 227-28, 237 Centric leaves, 239 Cephalins, 10 Cereals germination, 190 ontogenesis of, 374 tissue analysis of, 428 water requirements of, 374 CAC, 285 see also (2-chloroalkyl) trimethylammonium chloride Chaetoceros, 38 Chaetocerod didymus, 50

Chaectomorpha, 334

growth retardant, 273-98 Chelation metal and tolerance, 180 Chelator, 21, 37, 39, 261, 434 Chemical germination effects of, 201-4, 261 Chemosynthetic bacteria photosynthesis in, 87 Chemotaxis, 335-36 Chenopodium album, 195, 228 Cherry auxin and, 305-6 cell division in 304 dormant, 191 growth curve, 305 parthenocarpy in, 310, 313-14, 321 Chilling dormancy and, 215 dwarfism and, 200-1 foliation and, 191 metabolic effect, 214-15 Chitin, 330-31, 339 Chitinase, 339 Chitosan, 330-31 Chladorphora fibrils in, 334 Chlamydobotrys photoassimilation of acetate, Chlamydomonas, 37, 39-40, 329 Chlamydomonas eugametos, Chlamydomonas moewusii hydrogenase in, 41, 171 Chlamydomonas mundana, 37, 41-42 Chlamydomonas pallens B<sub>12</sub> bioassay, 42 Chlamydomonas reinhardi, 39, 41 Chlamydospores carbon dioxide effects, 329 Chloramphenicol, 31, 40 Chlorenchyma tissue analysis, 429 Chlorella, 30, 43-45, 115, 122, 124, 130, 134, 137-38, 280, 390-91, 395-97 absorption spectrum of, 453-54 carbon dioxide and, 43, 129, 329 carbon fixation in, 111-14 culture, 37-38, 389-90 ellipsoidea, 44, 335 glycolate and, 40, 128, 130 nitrogen metabolism in, 62-63, 65 pyrenoidosa, 45, 105, 394-95, 400, 405

reinhardi, 43 vulgaris, 335, 394 Chloride, 175-76, 178, 431 Chloris ciliata, 198 Chlorobium, 89 limicola, 83 thiosulfatophilum, 74, 83 chlorophyll, 74 Chlorocholine chloride see also CCC, 273 Chlorococcum antibiotics in taxonomy of, 45 macrostigmatum acidophily in culture, 44 Chlorococcoids, 45-46 2-chloroethanol, 289 (2-chloroethyl) tributylammonium chloride, 278 (2-chloroethyl) trimethylammonium chloride, 277-78 Chlorogenic acid, 443-44, 446, 448 oxidase, 446 Chlorogloea fritschii growth conditions, 47 Chlorogonium, 39, 50 blooms with E. gracilis, 50 p-chloromercurbenzoate in hyponitrite reduction, 61 4-chlorophenoxyacetic acid, 310, 312 p-chlorophynyl-1, 1-dimethylurea in nitrite reduction inhibition, 65 Chlorophyll, 8-9, 45, 74-75, 77, 83, 278, 312, 317, 391, 464, 468 absorption spectra, 74-75 453, 456, 468 fluorescence of, 463, 467 lamellae and, 7-8 synthesis, 32, 358 Chloroplast ferredoxin, 116 fragments, 466 absorption spectra of, Chloroplasts, 1-4, 8, 10, 39, 78, 81, 112-15, 125-27, 133, 136-37, 355, 358, 365, 405, 446 absorption spectra of, 466 functional unit of, 328 enzymes, 125-26 isolation artifacts, 125-27 lamellae, 2 lipid synthesis, 4, 7, 127 metabolism in, 121, 127 nitrogen in, 60, 65-66, 126 NADP and, 65, 67 prolamellar bodies, 2 protein extraction from, 32, 113, 117, 125-26 Chlorophyllide phytylation

role in lamellar development, 7, 8 Chlorophyllin absorption spectroscopy of, 456-57 Chloropseudomonas ethylicum chlorophyll in, 74, 75 Chlorosis, 172, 280, 290 Chlorotetracycline, 46-47 Choanephora cucurbitarum carbon dioxide effects on, 329 Choline, 42, 146, 273-78. 296 Cholinesterases, 281, 296 Choline metabolism, 281, 286 Chromatin pea seedling, 28-31 Chromatium photoreactions in, 76-84, 93 Chromatography, 27, 113, 308-9 Chromatophore in bacterial photosynthesis, 73-78, 80-85, 88-93 Chromogens, 401 Chromosome, 173, 410 Chrysanthemums, 272, 277-87, 283, 288, 290-92, 295 Chrysochromulina cell density in fresh water, 48 Chrysomonads, 37 Cigarette tobacco, 447 Cinchona pollen germination, 260 quinine in, 153 Cichorium endiva, 232, 402 Cinnamaldehyde, 444 Circadian rythms effect of Actinomycin D on, 31 Cis-aconitate, 122 Cistron, 264 Citrate, 37, 122, 128 Citric acid, 122-23, 445 cycle organic acids in, 121-25 Citrulline uptake in Chlorella, 43 Citrullus colocynthus, 199 Citrus sp., 176, 209, 289, 310, 367, 428 gibberellic and, 204, 310-12 lemon, gibberellic acid response, 312 paradisi gibberellic acid and fruit size, 209, 311 reticulata gibberellic acid and fruit

set, 310

cell division in, 304

Cladonia coniocraea, 45

sinesis

Claviceps purpuria, 155, 161 Clavine, 153, 155, 161 Clay soils, 291, 434 Cleome Amo 1618 and, 279 Clostridia, 81 Clostridium pzterionum, 93 Climate yield and, 410-15 nitrogen and, 432-33 high altitudes, 345-50 Climatic complex, 409 Clinostat, 402 Clonal selection theory, 264 Closed system plants in, 387-408 CO11 growth retardant, 273, 278, frost hardiness and, 288 Coagulation protoplasmic, 370 Co-A malonate decarboxylation requirement, 131 Cobalamin, 49, 51 Cobalt, 59 Coccidioides immitis, 329 Coccochloris elabens cobalamin assay, 46 Coccolithophorids, 47-49 Coccolithus huxleyi phagotrophy, 48-49 Coccolithus pelagicus, 47-48 Cocklebur, 24, 28, 30, 316 Coconut milk, 231, 309, 315 Cocos nucifera, 315 Codehydrogenases, 212 Codeine, 146, 151, 158-59 Coenzymes, 63-64, 93 Co-factors, 65, 111, 117 Coffee tissue analysis of, 428 Colchicine, 158, 334 Colews, 228, 234-35, 237 Colloids, 364, 366, 376 Competetive inhibition, 118 Competetive oxidation, 132 Compound leaves, 242 Compression wood, 285 Conchocelis, 51 Condensing enzyme in leaves, 122 Conifers net photosynthesis, 356 Coniine, 149 Conjugation yeast, 336 Continuous culture algal, 390, 395, 400 Contractile vacuoles, 171 Copper, 60, 176, 331 Coral stone, 435 Corn root ribosomes in, 22, 172, 285, 315, 367, 391, 428 Cornus florida, 207 Corpus initials, 237

Cortex apical, 231 Cortical cells, 282 Corylus avellana, 215 Cotton, 175-76, 277, 419, 428 Cotyledons, 214-15, 444 p-coumarin, 209-10, 296 Coumarin, 209-10, 296 Crab apple dwarfism, 200 Cratalaris phosphate absorption and, 433 Creatinine, 43 p-cresol phenolase substrate, 136 Crinamine, 161 Cricosphaera carterae, 48 Cristae formation, 3 Crop-logging sugar cane and, 410, 415 Crop rotation, 410 Crop yield growth retardation and, 287 Crotalaria phosphate absorption and, 433 Cruciferae, 263 Cryptogams, 230-31 Cucumber, 273, 279, 283, 286, 295, 309, 366 leaves, 23, 137, 282 Cucumus sativus, 309 Cucurbita moschata cell division in, 304 Cucurbita pepo, 61, 66 Culture algae, 38 closed system, 389-94 synchronous, 339 Curing physiological aspects of, 443-50 Currant, 305, 309, 311, 316 Cuscuts leaf premordia in, 236 Cutin, 263 Cyanide, 80, 133, 137 Cyanidium caldarium acidophily in culture, 44 Cyanocobalanin, 43 Cyano gp, 151 Cyanogenic Cycads, 47 Cycas revoluta, 228 Cyclic electron transport, 79 phosphorylation sites, 85-86 Cyclic phosphorylation, 95 Cyphomandra betacea, 159 Cystine reductase, 332 Cytochrome, 75-79, 81-86, 90-95, 121, 134, 456, 466 Cytochrome exidase, 125-26, 136, 447

Cytochrome C reductase in chloroplast, 126 Cytochromoid, 77, 91 Cytohistological zonation apical, 227 Cytoplasm, 3, 18, 255, 257 polymer synthesis in, 329 Cytoplasmic protein, 446 Cytoplasmic organelles, metabolism of, 125-28 Cytoplasmic streaming, 334

D

Daphne pseudomezeream, 241 date, 304 Datura alkaloid in, 148, 159 metal alkaloid synthesis, 155 Dature stramonium, 144, 147 Dature suavolens, 146 Daucus carota salt tolerance in, 178 Daylength, 294, 356, 412 germination, 196 growth and, 187, 199, 284, 413-14 flowering and, 412 Decarboxylation, 125, 131, 157 2,4, DCN, 272

minor elements, 434 Defoliation, 208, 247 Dehydration effects, 337, 363-64, 372-75, 381-82 6-dehydrohyoscyamine, 159 Dehydrogenases, 212, 369 Dehydropipercolate, 148 Deoxycholate ubiquinone oxidation, 82,

Deficiency symptoms

126 Deoxyglucosyl diglyceride, 11 Deoxyribonucleotides, 335

see also DNA Desmin, 234 Determinate growth leaf, 247

Detonula confervacea B<sub>12</sub> requirement, 42 1,4-diaminobutane, 148 1,5-diaminopentane, 148-49

Diaphorase in chloroplast, 126 Diatomaceous earth filtration of chloroplasts, 127

Diatoms, 42, 50, 66 Dibenzoyl-d-tartaric acid, 147

Dicotyledons growth retardants and, 279

procambial development,

thickening in, 243 2, 4-dichlorobenzylnicotinium chloride, 272, 285

2.4-dichlorobenzyl tributyl phosphomium chloride, 273-74, 277

2, 4-dichlorobenzyltrimethyl phosphonium chloride,

2,6-dichlorophenolindo-phenol, 76, 94

2, 4-dichlorophenoxyacetic acid, 25, 209

2, 4-dichlorophenoxyacetyl methionene, 310, 314 Dictyostele

in fern, 234 Dictyostelium discoideum amoebae of, 335-38 Diethylaminoethylcellulose, 136

Diffusion drought resistance and, 259

pressure dificit, 424 Digalactosyl diglyceride chlorophyll orientation in.

Digalactosyl dilinolenin, 2, 11 Digitonin

effect on enzyme isolation, 126 1,2-dehydropyradzine-3, 6-

dione, 271 3, 4-dihydroxy-acetaldehyde, 151

Dihydroxy acetone C red cycle, 118 Dihydroxyacetone phosphate

in PSCR cycle, 108 3, 4-dihydroxy-benzaldehyde, 146

3, 4-dihydroxycinnamic acid tritium labelled, 152 2-(1, 2-dihydroxyethyl)-

thiamine pyrophosphate, 116

3,-4-dihydroxyphenylacetaldehyde, 152

3, 4-dihydroxy-phenylethylamine, 151

3, 4-dihydroxyphenyl-pyruvate, 152

di-isopropylfluorophosphate, 296

Dimethylallyl-pyrophosphate, 156 Dimethylallyltryptophan, 157

Dimethylaminoethanol, 145 N-dimethylamino maleamic acid, 273, 278 dimethylaminosuccinamic

acid, 273, 275, 278 Dimethylbenzimidizole

in antipurine activity, 43 Dimethyl mercury stain for carbohydrates and olefins, 3

Dimethyl-B-propiothetin methionine as precursor, 52

N, N-dimethyl-tryptamine, 145 N-dimethyl-tryamine, 152

Dimorphism mold-yeast, 330-32 2, 4-dinitrophenol, 83, 114,

126 Dinoflagellates ecology of, 37-39, 50 Dioodotyrosine, 51 Diose

carbon reduction pathway, 105

Diphosphoglyceric acid photosynthesis product, 113 Diphosphate-sulfosugar, 11 Diphosphatidyl glycerol, 10 Disphosphopyridine nucleo-

tide, 78, 213 Dipterine, 145 Dissolved oxygen content algal production, 398 Disulfide

enzyme bound, 116, 332 5,5-dithiobis-3-nitrobenzoic

acid, 79, 94 Dithiocarbamates, 295 Dithionite

inhibition of hydrogenase formation, 41 Diurnal cycle

photoperiod and growth, 206 DNA, 213-14, 255, 258, 372 differentiation and, 27-34, 332

synthesis in nuclei, 228 DNAase, 28 DNP

nitrogen reduction, 60, 62, 64, 66 Dormancy, 45, 213-14, 356-

58, 430 chemicals in, 204-15 gibberellic acid and, 203-

4, 210 growth retardation and, 293 higher plants, 185-224 induction, 208-10

photoperiod in, 204-8, 285 seasonal, 188-89 seed, 185

temperature, 196, 201, 205, 359-60 types of, 187-89 water relations and, 205

Dormin, 211 Doronicum Clusii dry matter product, 357 Dorno region, ultraviolet light, 359

DOPA, 151, 446 Electron transfer Dopamine, 145-46, 151-52 photoreaction and, 78, 80, 85-86 DPIPH<sub>2</sub> photooxidation of, 76, 78, 88, 95 DPN 466 photoreduction, 79-82, 85, 87-88, 92-95 DPNH, 90, 91 oxidase, 90, 94 Dragendorff-reactive substances, 281 Drought adaptation, 369 Drought hardening, 363, 365, 375 RHP, 94 injury, 366-67, 378 mineral requirements and, 412 physiology of plants under, 363-86 28 reactions to, 381 resistance, 352-53, 359, 363-64, 367, 374-75, 377, 380-82 synthetic, 365-66, 416 Drupe fruits, 305-6 Dryopterus apical microsurger, 229-30 Element morphogenesis, 239-40 provascular tissue in, 232 loss Dryopters erythrosora spores, 33 Duckweed, 28 Elongation Dunaliella euchlora inhibition of Hill reaction, 42 root, 21 Dwarf heather plant moss, 351 Dwarfism, 200, 202, 281, 285, 348 Dwarf pea assay, 296 Dwarf shrubs transpiration in, 350 Embryo apical isolation, 230 conferoides, 51 sac, 309

Echinapsis
apical isolation, 230
Ectocarpus, 51
conferoides, 51
elegans
iodine requirement, 51
Ecology, 38, 345
ectotypes, 169, 180
Edaphic complex, 409
EDTA, 21, 37
Electric currents,
in biological systems, 403
Electrolyte desorption
ageing and, 379

Eggplant, 305, 309

Electron microscopy

lipid orientation, 13

protein membrane, 113, 256

ATP formation, 95 bacterial photosynthesis. 73-74, 76 cytochrome oxidation, 77 cyclic, 84, 91 oxidases, 121 photochemically induced, photophosphorylation, 84-85 sequence, 91-95 Electron transport nitrogen metabolism, 58-60, 64 Electron acceptor fumerate, 76 Electron potential ubiquinone, 94 Electroploreus, 339 Electrophoresis pea ribosome component, Petkus rye extract, 32 Pharbitis extracts, pollen protein, 257-58 photosynthesis products, 113 of ribosomal protein, 32 xanthium extracts, 27 Electrotropism, 263 differential requirement, 169 closed system, 404 Elodea, 228, 233 algae, 334-35 gravity and, 402 shoot, 227 thiouracil and, 21 ultraviolet light and, 359 Elymoclavine, 153, 161 Embden-Meyerhof pathway enzymes in, 340 pollen, 262 auxin production, 306-7 dwarfism and, 200 extract, 32 germination, 190, 197, 201 growth, 188, 305, 307 auxin, 307 liquid, 315-16 Embryogenesis, 242 Empetrum nigrum, 352 Endocarp, 304-5, 313 Endoplasmic reticulum, 256 Endopolyploidism, 255 Endosmosis, 171 Endosperm level auxin and, 306-9 dormancy and, 217 germination, 197-97 growth, 307 kinin-like activity and, 315

RNAase, 19 RNA ratio, 32 End-productinhibition, 264 Entermorpha culture of, 51 Enzyme activity mitochondrial properties, 126 adaptive, 59 CR cycle, 102, 109 cell wall and, 329, 335, 401 chloroplast and mitochondria, 125-26 citric acid cycle, 121-24 drought resistance and, 259 genetic effect, 169 glycolytic, 340 heat activation, 340 inactivation, 444-47 induction, 264 locational specificity, 328 organized systems, 116 photosynthesis and, 355 pollen, 257-58, 260, 263-64 snail hydrolytic, 331 substrate conversion capacity, 122 sulfhydryl binding, 118 supression, 265 vacuolar, 444 Ephedrine, 146, 158 (-) epecatechin, 443, 445, 448 (-) epecatechin gallate, 443 Epidermal cells hardening and, 378 Epidermis, 231, 243, 359 (-) epigallocatechin, 443, 444 gallate, 443, 444, 448 Epigenesis, 31 Epilobium hirsutum, 198, 238-39 Epilobium roseum, 198 Epinine, 145 6,7, epoxy-hyoscyamine, 159 Eremothecium ashbyii, 332-Erica carnea, 353 Ergocryptine, 153 Ergosterol, 156 Ergot alkaloids, 153, 155-56, 164 infection, 153 Escherichia coli, 59, 61, 150, 171 Escholtzia argyi germination, 199 Eserine, 296 Essential elements, 170-71 Esters permeability aids, 40 Ethanol, 210, 213, 444 Ethionine

effect on growth pattern, 33-34 Eucalyptus, 226 Euglena, 8 nitrite reduction, 63, 66 photosynthesis, 48 gracilis utilization of nutrients, 50 specific enrichment of, glucose utilization in, 50 hexokinase in, 50 plastid formation in, 32, 38-44, 50 pisciformis blooms with E. gracilis, Euphorbia lathyris, 230, 237, 239 Euxerophytes water deficiency and, 364-65, 375 Evaporating pans, 420-21 Evaporation, 348-49, 412, 414 Evaporometer, 349 Evapotranspuration estimate of, 420-22 Exine, 255, 257, 259-60 Exoderm pattern pollen and, 256 Extension growth shoots, 211 Extract carrot in, 41 of Pharbitis, 27 xanthium leaf, 27

Factor B nucleotide free Vitamin B12, 46 FAD, 58-61 Fagus sylvatica, 186, 194, 205 False fruits, 303-4 Far-red light summer dormancy and, 311 Farnesyl-pyrophosphate, 155, 157 Fat, 339 metabolism, 210, 212 Fatshedera growth retardation effects on, 283 Fatty acids algal nutrition, 41 alkaloid synthesis, 161 mitochondria membranes, 5 synthesis, 12, 66, 116-17, 121, 217-23 synthetase molecular weight of, 117 Feed-back enzyme inhibition, 31, 264,

Ferredoxin, 80, 81 carbon red, 103 electron transport, 67, 92-93, 95 in nitrate reduction, 60, 64 Ferricyanide, 75, 78, 128 Ferrocytochrome c, 76 Festuca ovina metal tolerance in, 180 rubra growth retardation, 279 Fertility pollen size and, 256 Fertilization metabolism and, 317-20 Fertilizer plant response to, 377, 426 Feulgen reaction, 213 Fibrillar orientation, 334 Fibrils cell wall, 328 Ficus careca fruit strength, 304 pumila leaf morphogenesis, 243 Field capacity, 418-21 theory leaf premordium level, 241 Filamentous growth carbon dioxide and, 330 Finch effect, 470 Flaven -3, 4-diols, 445 adenine denucleotide flavin adenine synthesis, 213 mononucleotide photooxidation in bacteria, 78 nucleotide oxidases respiratory function, 121 Flavenols, 443-44 Flavoprotein, 81, 91-93, 212 Floral appendage origin of, 236-40 Floral induction, 27-33, 246, 273, 277-78, 283-84, 286, 294, 297 Flowering chemistry affecting, 29, 33, 271, 281, 286, 294-96 climatic factors and, 412 morphogenesis and, 225 Flowers abscission, 320 formation, 285-86 initiation, 285 tissue analysis, 428 Flue-curing tobacco, 446-47 Fluorescence

chromatium, 81 pigment and, 257, 467 spectroscopy artifacts, 463, 467 excitation spectra pigment composition, 468 Fluorescent light plant development, 402 Fluoride nitrite reduction and, 62 Fluorimetric, 124 Fluorocitrate, 122 5-fluorouracil, 29-31, 40 5-fluorodeoxyuridine, 30-31 Fluorophenylalanine, 27 FMN in nitrate reductase, 59 nitrogen reduction, 60 photoreduction and, 80, 93 FMNH<sub>2</sub>, 79-80 Foliage leaves development, 236, 243 Formate, 146, 157-58 Formaldehyde, 146 Formamide, 113 Formic acid tobacco leaf, 447 N-formyl alkaloids, 158 N-formyl-desacetyl-colchicine, 158 Fossil pollen, 256 Fraction I protein, 113, 117 Fragarea spp, 304 vesca, 228, 242 Fraxinus ercelsior, 242 Free auxin, 307 Free radical, 150 Frost dormancy and, 357 drought and, 352 photosynthesis capacity and, 356 resistance growth retardants and, 288, 353-54 Fructofuranose, 262 Fructose, 103, 262 phosphate, 108 -6-phosphate, 118, 128 1-6-diphosphate, 109-10, 115 diphosphate aldolase, 118 abscission, 308, 318-20 covering and temperature, 196 development, 249, 315, 318 growth, 303-8, 311, 319-21 kinins in, 315-16 photosynthesis in, 317 maturity spectral transmission and, 464 set drought and, 375 growth substances, 303-26 pollen viability, 258

size, 307, 311-13 trees ion uptake in, 176 growth retardants and, 284 Fucose cell wall, 330-31 Fucus vesiculosus nutrient uptake, 51 Fumerase, 124, 126 **Fumerate** electron acceptor in photooxidation, 76, 78, 80, 93, 95 Fumigation, 410 soil, 410, 436 Fungi carbon dioxide effects on, 329 cell wall, 327-28 morphogenesis in, 327-44 nitrate reductase in, 59 snow, 350 sporulation in, 336 trap forming, 333 Fusarium moneliforme gibberellic acid synthesis in, 297 Fusion tube, 336

G

Galactolipid in chloroplast, 2, 6, 7, 10 Galactose cell wall, 330-31 β-galactosidase, 11 Galactosyl diglyceride, 2 D-galacturonic acid, 262 Galanthamine, 152, 161 Gallocatechins, 443-44, 448 Gametes attractants, 335 Gametogenesis, 329 diffusion, 390 exchange microbe system, 392-99 waste treatment and, 398 Gel diffusion, 264 Generative nucleus, 255, 258 Genes crop varieties and, 410 enzyme synthesis, 169 mutation, 256 Genetic control ion transport, 169, 178-81 Genetic markers, 40 Geotrichum, 332 Geotropism ageing and, 248 Geraniaceae tartaric acid in, 132 Germination, 24, 329 chemical effect on, 201-4 covering structures and, 196-200 dormancy and, 188

growth retardants and, 290, inhibitor, 209, 271 induction process, 199 photoperiod and, 199, 210 pollen, 260-63 temperature requirement, 189-204 ultraviolet radiation and. 257 Germ tube, 340 Geum turbinatum, 359 Gynoecium, 375 Gibberellic acid, auxin and, 207, 307, 311 barley endosperm test, 297 dormancy, 204, 210 dwarfism and, 203, 207 flowering, 285 fruit growth and, 307, 309-11. 313 germination temperature and, 201-4 growth, 207, 303, 311 growth retardant substances and, 293-97 morphogenesis and, 248 parthenocarpy, 310, 313-14, 319-21 Gibberellins, 46, 202, 204, 207, 209-10, 231, 246 Gibberellin-like substances seed and fruits, 314-15, 318 Gibbs effect, 108, 118 Gila capitata serpentine soli and, 180 Ginkgo shoot apex in, 227 Girdling flower set and, 309-10 Glechoma hederacea, 237 Gleichenia, 247 Glenodinium foliaceum, 42 Globularea cordifolia frost and, 353, 358 Glucoprotein, 264 Glucosamine, 331 synthetase, 339 Glucose metabolism of, 114, 261-62 uptake, 134, 138 vascular induction, 232-33 Glutamate, 42, 122, 147-48, 215, 338 Glutamic acid, 27, 40, 264 Glutamic acid  $\gamma$ -semialdy-hyde-2-C<sup>14</sup>, 147 Glutamic dehydrogenase, 337-38, 447 Glutamic-oxaloacetic transsaminase, 125 Glutathione, 131 Glutathione reductase, 332 Glyceraldehyde phosphate, 118

51 Glycine, 25-26, 37, 42, 130, 135, 171-72, 339 Glycine-alanine transaminase, 339 Glycoaldehyde stimulation of oxidation, 128-30 Glycoaldehyde thiamine pyrophosphate, 116 Glycogen, 331 Glycolate oxidation of, 132-34 Glycolate oxidase, 121, 125-28, 130, 132-36, 447 Glycolic acid carbon reduction pathway, 103, 115 in algal nutrition, 39-40 synthesis, 116, 128-29, 139, 146 Glycolic acid phosphatase, 116 Glycolyl-thiaminepyrophosphate, 128 Glycolipids in organelles, 2, 9-13 Glycolysis inhibition site, 114, 211-12 Glycoprotein, 400 Glycosidase, 445 Glyoxalate cycle, 39-40, 124, 134-35, 339 Glyoxylate reductase, 134 Golenkinia minutissima, Goniotrichum elegans morphogenetic requirement, 51 Gonyaulax polyedra, 31 Gossypium hirsutum, 175 Gradient induction hypothesis cambial formation, 235-36 Grafts, 206, 235 Graminae hordeum germination, 202 Grana development of, 7-8 Grass heat resistance in, 374 Gravimorphism, 285-86 Gravity free cultures, 390 Growth apical meristem and, 226 center, 236-40 curves fruit, 304-5, 313-14 dormancy, 187-89 factors in algae, 37, 38, 41, 46, 327 inhibitors, 207-11, 271, 285, 303, 308-9, 316-17 ion absorption and, 173-75 leaf, 29 metabolism, in, 328-33 ontogeny and, 243, 248-49

Glyceric acid, 130-31, 135 Glycerol, 41, 77, 125, 2489
9
108, 313, 320-21
retardant chemicals, 271302
substances, 202-3, 207, 303-26
temperature and, 196, 201
water and, 20, 335, 417-20
Guanine, 27, 34
Guanylic acid, 26, 32-33
Guanosine, 33
Guanosine, 33
Guanosine triphosphate, 20
Gyrodinium, 50
Gymnodynium breve, 41
Gyrodinium cochnii, 41

photoperiod and, 199, 204-

#### H

Haemanthamine, 152, 161 Haematin spectroscopy of, 466 Haematococcus, 43 Halobacterium cutrirubrum, Halophytes, 4, 414 Hansenula vingei, 336 Hardening, 353, 377-79, 382 injury, 347, 371, 373 resistance, 363, 367-74, 380, 382 Heavy water, 44, 365 Hedera helix, 243 Helianthus annuus, 240 Helianthus tuberosus, 206 Heme electron transfer, 91 Hemecellulose, 400 Hemerocallis, 197 Hemixerophytes, 367-68 2-heptyl-4-hydroxyquinoline-N-oxide, 76, 79 Heracleum, 238 Herbicides, 52, 271, 280 Hermaphrodilic flowers formation of, 286 Heteroblastic level, 242-48 Heterocyst formation, 333-34 Heterothallic yeast, 336 Heterotrophy, 43, 45, 329 Hevea mineral uptake, 431, 434 Hexahydropapaverine, 159 Hexokinase adaptive in E. gracilis, 50 Hexahydrophthalic acid, 278 Hexose monophosphate shunt, 262, 340 Hibernaculum, 195 Hill reaction, 12, 41, 66 Hips giberellic acid and, 307 Histidine, 41, 258, 400 Histone, 30-31 Homoblastic development, 242

Homocystine, 42 Homogyne alpina frost and, 353 Homoserine, 39 HOQNO, 80, 83, 85-87, 90, 94-95 Hordenine, 145-46, 152 Hordeum vulgare, 175, 177, 179, 259-60 Hormones seeds and abscission, 319-21 Humidity, 258-59, 337, 348-49, 417 Hydrangea hortensis, 289 Hydrastine, 145, 151-52 Hydrazines, 273, 277 Hydrogen nitrate reduction, 57-58, 63-64, 67 photometabolism of, 73, 81-83, 91-93 respiration, 211 transfer across membranes, 121 Hydrogenase, 41, 45, 63-64, 67, 82 Hydrol Humic Latosol, 435 Hydrotropism, 262-63 3-hydroxy-anthranilic acid, 150 Hydroxybenzaldehyde, 152, 444 p-hydroxycinnamic acid, 152 β-hydroxyethylhydrazine, 273-74, 277-78, 285 6-hydroxy-hyoscyamine, 159 y-hydroxy-α-ketoglutarate synthesis of, 134 Hydroxylamine, 57-58, 62, 66, 68 Hydroxylamine reductase, 61 Hydroxylupanine, 145, 149 7-hydroxy-6-methoxycoumarin, 446 p-hydroxyphenyllacetate, 133 β-hydroxypropionate, 42 a-hydroxy-2-pyridinemethanesulfonic acid, 132-33 Hydroxypyruvic acid, 130-31 4-hydroxyl-5-isopropyl-2methylphenyl trimethylammonium chloride, 272-73, 275 Hydroxymalonic acid, 131 6-hydroxy-1-methyl nicotinic acid, 150 6-hydroxy-nicotinic acid, 149 Hydrosulfonates, 129, 132-34 Hydroxy-tryptophan, 155-56 Hygrine, 155 Hymenomonas carterae, 49 Hymeomonas elongata, 49 Hyoscyamine, 144, 146-47,

Hyphae morphogensis in, 330-33 Hyponitrate, 58 Hyponitrite, 57, 60 Hyponitrite reductase, 60 IAA abscission and, 320 gibberellin synergism, 295-311 growth in, 20, 47 metabolite mobilization and, 318 xylem induction, 232, 234 Ipomoea leaf form, 243, 246 Ipomea batatus, 402 Ilex, 284 impatiens roylei, 229 Inchoate alkaloid, 164 Incompatibility, 258, 263-66 Index of refraction spectroscopy and, 453-54 Indole-3-acetic acid, 46, 211, 295-96 see also IAA Indolacetonitrile leaf form and, 246 Indolebutyric acid effect on protein, 24 Indole-pyruvate, 153 1-(indolyl)-2-amino-5methyl-hexene-4, 157  $\beta$ -inhibitor, 316-17 Inhibitors growth, 208-11, 303, 316-17 photosynthesis, 114 respiratory, 95 Inositol, 261, 331-32 Interfoliar meristem, 238 Invertase pollen ageing and, 260 Ion exchange chromatography, 339 Ion uptake, 3-4, 169-70, 173-80 Ion transport selective, 169-84 Iodine, 51, 176 Iodoacetate inhibition of glyceric acid synthesis, 131 Iron chelation, 434

culture media and, 37-38

nitrogen reduction and, 59 uptake, 172, 176, 434

exchange capacity, 179

vitamin requirements,

Irrigation, 416-23

Isochrysis galbana

Hyoscyamus niger, 32

vernalization of, 33

shoots

Isocitritase, 39-40, 124, 339 Isocitrate, 122-23, 339 Isocitric DH, 134, 339 L-isoleucine, 39 Isonicotinylhydrazide, 129 Isopelletierine, 147 Isopentenyl-pyrophosphatedimethylallyl-pyrophosphate isomerase, 155 Isoprene unit, 156-57 Ivy, 246

Juniperus nana frost and, 353 Juvenile slage growth, 244-46

Kaempferol, 446 Kalanchoe blossfeldiana, 27, 368 α-Ketoglutarate, 73, 83, 338-39 α-ketodehydrogenase, 134 Ketoglutarate oxidase, 339 Ketomalonic acid, 131 Kinase, 40, 110 Kinetin, 24-27, 314-15, 318, 372 Kinin-like substances origin, 315-18 Kinins, 303, 315-16 Knop's solution, 31, 201 Krebs cycle, 39, 50, 124, 211, 213, 238, 340 Kynurenine, 150

L

Labiatae bud formation in, 238 Lactobacillis mesenteroides, 128 Lactate, 49 Lactone isocitric acid formation, 123 Lactuca sativa, 178, 402 Lamellae, 2, 6-9, 256 Lamina wall, 334 Land forms plant, 248 Larex decidua carbon dioxide uptake in, 351 Lateral structures appendages development of, 236-42 buds, branching, 226, 236, 238, 281, 285

development, 273, 286 Lathyrus aphaca, 243 Laudanine, 159 Lead, 180 Leaf auxins in, 234, 308 cell division factor in, 316 dormancy in, 206-8 expansion temperature and, 191, 241, 243, 253, 353, 378 development and growth, 234-43, 246-47, 250, 313, 412 primordia, 214-15, 230-41, 246-47 spectral analysis of, 428-30, 460, 466 Lecithins, 3, 8, 10 Lemna, 66 gibba, 28 paucicostata, 33 Lemon gibberellic acid response, 312 growth inhibitors in, 316-17 Lepidium, 21 Lepidicum virginicum, 202, 293 eptandra sibirica, 199 Leptopteris, 244 Leptosporangiate ferns, 238, 240 Lettuce seed light promoted germination, 293 D-leucine, 6, 25, 27, 171 Leucoanthocyanins, 316 Leucocyanidins, 445 Leurocristine, 158 Lichens photosynthesis in, 355 symbiosis and, 44-45, 47 Light absorption, 451-52, 458, 460-61 dormancy and, 186, 194-95, 198 germination, 197-99, 210. 293 intensity, 248, 292-93, 354-56, 394, 412-14 monochromatic, 389, 462 nitrogen and, 59, 65-66, 411, 432 oxygen and, 137-39, 390 photosynthesis and, 73, 76, 82, 354, 393-95 scattering, 452-61 synthetic pathways and, 12, 116, 124-25 transmittance, 460-62 Lignin, 292, 305

Lilium

pollen of, 255, 263

Lilium longeflower phosfon and, 82, 279-80, 282 Lima bean mineral analysis, 428-29, 466 Limestone calcium deficiency and, 426 Linoleic acid, 11-12, 137 Lipases, 9-10 Lipids algal, 401 cell wall, 328, 330-31 chloroplast, 127 estimation by Anthrone method, 6 membrane, 1-16 pollen, 258, 340 surfactant, 1 Lipoic acid, 115 Lipoprotein, 1, 6, 20, 331 Lipoxidase, 12, 137 Liquid nitrogen, 77, 465 Lithium bromide, 289 Liver enzyme, 158 Liverworts, 47, 59 Lolium multiflorum, 176 Lolium perenne, 176, 179 Loiseleuria procumbens, 352-53 Lugodium, 247 Lunularia cruciata, 206 Lupinine, 145, 149 Lupinus, 230, 233, 260 Lupenus albus, 228-31, 234 apical activity, 241 Lycopersicum pempinell folium, 304 Lycopodium selago type, 238 Lycorine, 146, 152, 161 Lypersicum esculentum, 304 Lysergic acid type alkaloids, 155 Lysine, 27, 145, 148-49, 161 Lysozyme, 333

Macroconidium formation, 337 Macromolecular assemblies, 328 Macromolecules cell wall, 329-39 Macrophylls incipient, 236 Magnesium, 37-60 analyses, 428, 431 deficiency, 4, 172 nutrition, 179, 397, 404 soils and, 180, 433 Magnesium oxide, 467 Magnesium silicates, 435 Magnesium sulfate, 424-25

Maize, 139 Manullaria heyderi, 228 Malate synthase, 40, 124 Maleamic acid, 273 Maleic hydrazide, 209, 271, 273, 278, 285, 296 Malic acid, 40, 88, 122-25, 128, 445 from carbon reduction, 102-3, 109, 111 Malic DH, 123, 125-27, 447 Mallomonas, 48 Malonic acid malic acid inhibition, 103, 123, 131 Malonyl Co-A, 12, 117 Malus, 176, 260, 304 Mandarin orange Gibberellic acid response, Manganese, 6, 61, 130, 434-35, 428 uptake, 172, 176, 178-79 Mannan-protein complex, 331 Mannich reaction formation of heterocyclic ring, 145-47, 164 Mannitol, 173, 424 Mannose cell wall, 330-31 Marsilea, 41, 245-47 Matteuccia, 232 Mitochondria isolation procedures, 125 Maturation, growth retardant effect on, 287 Meiotic division, 256 Melamic pigment, 338-39 Melosira nummuloides B<sub>12</sub> requirements, 42 Membranes biosynthetic sites and, 117-21 in carbon red cycle, 117 chromatophore, 89 corpuscular concept of structure, 5-7 dimensions of, 2 electron microscopy of, 2-3 lipids in, 1-16 nuclear, 5 pollen, 256-57 tonoplast, 5 unit, 1, 3 Menadione, 80 Mentha piperita, 249 6-mercaptopurine, 42 Meristem age and growth, 415 auxin and, 235, 306-7 interfoliar, 238 Meristem ring, 228-31 Mesocarp, 304, 308, 313 Mesophyll cells leaf, 243 Mesophyte plants

drought and, 363, 365-66 Metabolism after-ripening, 214-15 cytoplasmic organelles, 125-28 dormancy and, 211-12 drought and, 364, 377, 381 environment and, 249 growth retardants and, 289-90 in chloroplasts, 121, 127 inhibitors, 129, 245 leaf differentiation, 233, overheating and, 367-69 Metabolites citric acid cycle, 121-24 synthesis genetic control of, 170-71 growth center and, 236-37 segregated pools of, 128 transport, 22, 235, 319 Metallic ion absorption, 169 Metal linked oxidases, 121 Metallo-flavoprotein, 58-60 Meteorology crop yield and, 410-15 Methanol inhibitor extracts, 210 Methionine, 33-34, 39, 40, 52, 335, 400 cell wall and, 289 methyl donor, 146, 158 synthesis, 42 N-methyl-anabasine demethylation of, 146 β-methylasparate from glutamate, 42 Methylcyticine, 145, 149 Methylene blue photooxidation of, 76, 68 Methyl donor, 146, 158-59, 262 8-methyl lipoic acid inhibition in C red cycle, 110, 115 Methylmalonate, 42, 150 N-methyl-nor-laudanosoline, 159 N-methylphenazonium sulfate, 125 N-methylphenylamine, 145 Methyl red reduction in photosynthesis, 58-79, 94 N-methylsuccinamide, 147 Methyl transferase in alkaloid synthesis, 158 α-methyytropidines, 147 O-methylthreonine pigment inhibition, 39 5-methyl-DL tryptophan euglena uptake of, 33-34, 40 N-methyltyramine, 145

4-methyl-n-valeric acid, 50

Mevalonate, 154-57, 161, 336

Michelia fuscata, 241 Michaelis constant, 80, 174 Microbial cells RNA synthesis in, 17 Microbial fermentation, 444 Microclimate high altitudes, 345-55 Microcoleus vaginatus, 47 Microcystis aeruginosa, 46 Microfibrils, 334, 400 Microglena arenicola, 49 Microphylls incipient, 233, 236 Microsomes in coleoptile, 31-32, 466 Microspectroscope, 456, 465 Microspore, 3, 255-56 Microsporogenesis S-gene action in, 265 Microsurgery apical, 225, 229-30, 239 Millet heat resistance and, 380, 391 Mineral nutrients critical levels, 373, 429-34 Minerals deficiencies, 4, 43 Mineral nutrients pollen and, 256, 260 pot testing for, 426-27 tissue analysis, 428-36 yield and, 425-36 Minor elements deficiency symptoms, 434 Mitochondria carbon dioxide fixation, 127 enzymes, 125-26, 129, 332 functional unit of, 328 mammalian structure, 10 membrane in, 3, 5 tapetal cell, 256 tobacco leaf, 445, 447 Mitochondrial fraction, 122-23 Mitosis requirements for initiation, 31 Mitotic index onion, 31 Mixed culture, 396, 404-5 Moisture, 411 growth and, 415-23 Molecular absorption spectroscopy and, 459 Molecular weight fraction 1 protein, 113 Molisch reaction, 5 Molybdenum, 58, 435 Monocalcium phosphate, 435 Monochromatic light, 462-63 Monochrysis lutheri, 41, 49 Monoethyl glutamate, 40 Monoethylglycine ester, 40

Monogalactasyl dilinolenin, 11 Monogalloyl quinic acid, 444 Monoiodoacetic acid carbon dioxide fixation inhibition, 114 Monostroma culture of, 51 Morphine, 146, 151-52, 158-59 Morphogenesis algae and fungi, 327-44 cellular polarity, 33 shoot, 225-54 Morpholene, 277 Morpholenium, 273, 275 Morphology ageing and, 248 cell wall and, 328 Morus spp, 304 Mougeotia chloroplasts in, 8 Mucilage curing and, 443 Mucopeptide, 333 Mucor rouxii, 330, 340 Mucorales, 330, 335 Multifunctional enzyme system, 117-18 Mung bean leaves TCA cycle in, 124 Muramic acid mucopeptide, Musa fruit structure, 304 Musci apex type, 227 Mustard leaves, 122-23 Mutants, 169, 256 ion transport in, 171-73 nitrate reduction and, 62 osmotic, 173 Mycelial walls, 330-31 Myelin figures, 1-3 N

apical culture, 232 NAD, 125, 129 NADH<sub>2</sub> as hydrogen donor, 59-61 reduction of in bacteria, 64-65 NADPH<sub>2</sub> in nitrate reductase, 58, 60-61, 67, 112, 234 Nannochloris, 38 Naphthaline acetic acid CCC reverals, 296 Narcissus tissue cultures, 152 Narcotiline, 151 Narcotine, 146, 151-52, 157

Narinogen

gibberellic acid interaction, 210 Native auxin stem tips, 207 Necic acids, 148 Nemalion multifidum, 51 Nematophagous fungi, 333 Nemin, 333 Nemophilia insignis short day germination, 199 Neodymium chloride, 456-57 Nerine methylation of alkaloids in, 158 Nerine bowdenii, 158 Nerolidol-pyrophosphate, 155, 157 Net photosynthesis, 354-57 Neurospora enzymes in nitrate reduction, 57-58, 60, 62, 153, 169-71 Neurospora crassa, 331 Neurospora tetrasperma, 340 Neutral auxins, 308 Neutral galactolipids similarity to cerebrosides, 11 Nicotiana, 148-51, 240 glauca, 144, 148 glutinosa, 146, 173 rustica, 3, 25, 129, 372 tobacum, 25, 173, 179 Nicotinamide-adenine nucleotides in nitrate reduction, 63-67, 79, 151 Nicotine, synthesis, 144-51 Nicotinic acid, 40, 145, 149-51, 161 Nicotiniums, 272, 275, 279 Nitella axillaris, 334 Nitella apaca fibril orientation, 334 Nitric oxide, 58, 60 Nitric oxide reductase, 60 Nitrite in nitrate rediction, 57, 60-64, 66-68 Nitrate reductase in higher plants, 59, 65, 67-68 Nitrate reduction, 61-68 Nitrogen algal nutrition and, 38, 43 49, 330-97, 403-4 crop yield and, 411-13 fertilization and, 205, 433 germination temperature and, 201-4 Nitroxyl instability of, 58 levels, 428-31 photosynthesis and, 66, 82, 126, 335 Normographs, 467

Nostoc, 47 Nostocacae, 46-47 Nostoc muscorum, 46-47, 333 Nucleic acid, 18, 20-21, 214, 228 dimorphism, and, 332 hardening and, 378 heat resistance and, 372, 382 morphogenesis and, 29-33 protein synthesis and, 380 Nucleolar RNA, 25 Nucleoprotein, 213, 372, 374, 380 Nucleotide, 28, 33, 214 Nucleus division of, 255, 313, 335 DNA levels, 213 pollen tube, 263-64 Nuphar, 230, 238, 244 Nutrition algal, 37-56 crop yield and, 412, 414, 416, 427 morphogenesis, 245, 247 Nymphaea, 238, 244, 256 Oat manganese absorption in, 178-79 Ochromonas antipurine extract, 43 Ochromonas danica, 39, 43, 48-49, 52 Ochromonas malhamensis culture, 38, 42-44, 48-49, 52 Ochrosphaera minuta, 48-49 Ochrosphaera neopolitana, 49 cis-9, 12, 15 octadecatrienoic acid, 12 Oedogonium hormonal control of, 49 Oenothera chloroplast from, 126 Oenothera ammophila, 198 Oenothera biennis germination in dark, 198 Oils germination and, 260 phytotoxic, 3 Olea europea, 21, 305 Oleic acid, 12, 127, 137 Onion root tips, 17-18, 25, 31 Onoclea, 232 Ontogenesis, 187-88, 363 Ontogeny drought resistance and, 381 Ophiostoma annulatum, 332 Opium poppy alkaloids in, 151, 157-59, 164

Optical density, 452, 458-59,

absorption spectra and, 456

462-63

Optical pathlength

Organelies, 256, 328-29 glydolipids in, 9-13 Organic acids heat resistance and, 369-71 respiration 121, 127-28 synthesis, 128-32 tobacco, 445 Ornithine, 43, 144-48, 161 Ortho-phenanthroline, 12 Orotic acid, 25, 30 Orthoquinones, 444, 448 Oryza sativa, 279 Oscillitoria rubescens, 47 Osmium tetroxide lamillae stain, 2-3 Osmosis, 173, 307 Osmotic mutants, 44 Osmotic pressure, 171, 330, 335, 350-54, 376, 402 Osmotrophism, 49 Osmunda innamomea leaf primordia culture, 240, 247 Ouchterlony's antibody agar method, 31 Ovary, 303-6, 322, 363 wall, 305, 319-20 Oxalic acid, 122, 130, 445 Oxalic acid oxidase in Scenedesmus, 136-37 Oxaloacetate, 122, 128, 150 Oxidase, 91, 121, 132, 447 Oxidation potential, 83, 87, 366 substrate, 63, 68, 150, 164, 210 Oxidative deamination, 122, 444 Oxidative enzymes, 125-26, 136 Oxidative phosphorylation and potassium accumulation, 3, 90-91, 121, 126, 133, 445 Oxo acids, 145-48 Oxygen continuous culture and, 390 curing and, 444-45 diffusion and, 397-98 dormancy and, 208, 211electron transfer and, 121 germination, 196-97 partial pressure, 139, 426 photosynthesis and, 77-79, 83-84 pollen viability, 260 production, 12, 65-66, 115, 389-404 synthetic reactions and, 12, 64, 116, 121, 130, 133 transfer and, 398 uptake, 91, 122, 125, 127, 132, 137-39, 338 Oxyria digyna, 354-44, 359-

6-oxo-hyoscyamine, 159 P Packing theory, 241 Palisade tissue, 354, 358 Palmitic acid in chloroplast, 11 Palmityl-CoA, 213 Papaver, 161 Papaver somniferum narcotine synthesis, 157-58 Papaverine, 151 Paper chromatography, 281, 316, 444 Paper electrophoresis, 264 Paramecium bursaria, 45 Paramorphogenesis, 327 Parascorbic acid, 209 Parasite snow fungi, 350 Parenchyina, 234, 313 Parmelia encausta, 355 Parthenium argentatum, 202 Parthenocarpy, 303, 307-14, 321 Particulate enzymes extraction of, 125 Pavlova gyrans, 49 Peach, 191, 201-2, 209, 304-8, 313, 316, 319-20 epicotyls, 129, 235 extracts, 149, 151 RNA in, 22, 28, 30, 32 straight growth test, 295 fruit, 304-6, 309, 316 Pectin, 256, 261 Pectolytic enzymes, 262, 289, 401, 447 Penduncle, 304 Pelargonium, 132 Pelletierne alkaloids, 149 Penicillin, 49, 333 sporulation in, 337 Penicillium chrysogenum, Pentose phosphate carbon reduction cycle, 101, 106, 109 Peona suffructicos dormancy and gibberellic acid, 202 Pepper fruit, 287, 309 Perchloric acid, 18 Peresea americana, 304 Pereskia aculeata, 309 Pericarp, 313, 315

Periodate

Pericycle, 282

in ion accumulation, 51

Permanent willing percent-

age, 417-18, 421 Permeability, 39, 144, 365 Peroxidase oxidation of hydroxylamine, 68, 289, 295-96, 447 Perrhenate carbohydrate, 3 stain, 3 Petals, 304, 313, 316 Petioles, 177, 243, 428-30 Petkus rye extract of vernalized embryo, 32 Petunia plants, 278-79, 283, 286, 288, 294 PGA carbon reduction intermediate, 101, 105, 107, 109-15, 117 pH, 37, 178, 255, 262, 288-89, 433-34 Phaeodactylum tricornutum, 44 Phagotrophism, 46-49, 52 Pharbitis nil, 27, 30, 282, 285, 294-96 Phaseolus, 204, 230, 314-15 Phaseolus vulgaris, 3, 4 Phenanthrene alkaloid skeleton, 151, 158-59, 161 Phenazine methosulfate, 78 Phenol, 37, 121, 158, 211, 443-47 Phenoxyacetic acie, 24, 25 Phenylalanine, 6, 18, 145-46, 151-52, 154, 158, 161 Phenyl-1-lactate, 133 Phenylmecuric acetate, 80 Phenylthiourea, 339 Phenylurethane, 62 Pheophytin, 9 Phloem, 234-36, 282 Phoenix dadylifera, 304 Phormidium uncinatum, 333 Phosfon, 372-76 Phosphatase, 9, 129 Phosphate, 26, 115, 179-80, 330 - 31nitrogen reduction and, 58, 60, 64 nutrition and, 38, 44, 214, 365, 397, 404, 428 uptake, 135, 173-75, 426, 434 Phosphatidic acid, 10 Phosphatidyl choline, 10 Phosphatidyl ethanolamine, 10 Phosphatidyl glycerol, 10 Phosphatidyl inositol, 10 Phosphatidyl serine, 10 Phosphatidyl triose, 5 Phosphenol pyruvate carboxylase, 127, 262 Phosphoenolpyruvic acid, 109 4-phosphoerythrose

C red intermediate, 118 Phosphoglyceraldehyde, 108, 118 Phosphoglyceric acid, 103, 106-7, 129-30 Phosphoglycolic acid, 116, 129 Phosphoinositides, 10 Phosphoketolase, 128 Phospholipids, 9-13 Phosphoniums, 273, 277, Phosphorolysis, 128 Phosphopyridine nucleotides, 26 Phosphorus fertilizer, 377, 433, 435 Phosphorus index, 425-26 soil levels, 425-26, 428-29, 431-33, 435 Phosphorylation, 64, 80, 101, 366, 382, 448 Phosphorylcholine, 290 Photoperiodism, 27-29, 186, 247-49, 293-94, 285-86, 353, 359-60, 368, 451 Phytocomycetes, 327, 330, 338-40 Phyllodes, 243, 244 Phyllotaxis, 236, 241-42, 244 Physalis franchetti germination, 198 Physiographic complex, 409 Physiological ageing, 245-47 Physiological dwarfs, 200, 203 Physiology high altitude, 345-62 of growth retarding chemicals, 271-302 Phytochrome system, 199 293-94, 297, 451, 464, 466, 497 Phytol, 8-9 Photooxidation, 8, 75-79 in bacteria, 74 cytochrome, 93 Photophosphorylation, 65-66, 82-95, 121, 127, 134 Photoreduction, 41, 74-75 76, 79, 81, 85, 87, 93, 114 Photorespiration, 121, 137 Photosensitivity, 358 Photosynthates, 317-18, 320, 359 Photosynthesis, 103, 105, 114-15 Algal, 31, 37, 40 alpine plants, 354-56, 358 bacterial, 73, 81-87 carbon dioxide and, 110, 355, 414-15 drought hardening and, 377

electron transport in, 116, 451, 466 gas exchanges and, 388-89, 396-98, 403 nitrogen reduction and, 63temperature and, 346, 356, 413 quantum yield, 460 Photosynthetic capacity, 356-58 carbon reduction cycle, 101-20 structure higher plant, 390 surface morphogenesis and, 249 unit in bacteria, 74 Picea excelsa, 354-56, 358, 361 Pisolinium, 272, 275 Pigment pollen, 256-57 spectrum of, 451, 454, 456-60, 464, 468 synthesis inhibition, 39 tobacco leaf, 445, 447-48 Pinguicula gradiflors, 195, 197 Pinocytosis penetration of RNAase, 17 Piperidine, 145-49 1-piperidine carboxylate, 272-74 Piperidinium, 273, 275, 277 Pinus cambial initial, 235 cembra, 247-48, 351-58 excelsa, 353 lambertinians, 228 mugho, 353 strabus, 236 sativun, 229 Pistils, 262-63, 265, 313 Pit sclerification, 313 Placenta auxin in, 306 Plant sap osmotic pressure of, 424 Plant vigor, 410, 415-16 Plasmolemna synthesis, 263 Plastid formation in Euglena, 32 pigments in, 446 prolamellar body formation, 3 Plastochrome, 237 Pleurochrysis scherffelii, PMS photoreactions of, 80, 82-84, 86, 90-91, 95 Poa annua, 33 Poa pratensis, 203, 279

Poa scabrosa, 206

growth retardants and, 272, 277, 290 Polar transport auxin, 234, 320 Pollen auxin in, 260, 305 chemistry, 256-58 chemotropism, 262-63 formation, 255-56 germination, 258, 260-63 membrane, 256-57, 260, 262 physiology, 255-70 protein and enzymes, 257-58 storage and viability, 258-60 tube, 258, 261-63, 310 wall 255, 257 Pollination, 309-11, 317-20, 375 Polyglucose, 339 Polyglycerolphosphatides, 10 Polymers cell wall, 328 Polymixin B, 46 Polyphenolic glycosides. 446 Polyphenol oxidase, 133, 136, 339, 444-47 Polyphenols, 444-45 Polyploidization pollen size and, 256 Polysaccharides, 263, 328-32, 336-38, 400-47 Polystyrene latex, 456, 459 Polytoma, 40 Polytomella, 39 Populus trichocarpa, 236 Porogamy fat and, 258 Porphyra tenera, 51 Poryphyridium cruentum, 51 Post dormancy, 188, 190, 194, 197, 204 Potassium absorption, 3, 176 accumulation, 3-4 fertilizer, 433 index, 430 soil analysis, 425 tissue levels of, 177, 179, 373, 428-31 transport mutant, 171 Potassium chloride, 369 Potassium cyanide photosynthesis, 114 Potassium nitrate, 424 Potassium permanganate stain, 2 Poteriochromonas stipitata, 49 PPNR, 80-81, 112, 115 Precipitation climate and, 346, 349, 351

Poinsettias,

Predormancy, 187, 190, 194-95 Primary leaves, 243-44 Primula, 230, 234 Primula algida, 357 Procambium, 231-35 Procaryotic cells, 333 Prodesmogen, 231 Prolamellar body in chloroplasts, 2-3 Propionate, 42, 148, 150 Protein algal, 400-1 breakdown, 27, 289, 337-38, 371-74, 381 cell wall, 328, 330-31, 400 chloroplastic, 32, 75, 117, curing reactions, 445-48 drought and, 366-67, 375-78, 380 leaf, 27, 273 in membranes, 1-2, 13 synthesis, 17-18, 25-26, 28, 30, 32, 371-73 temperature and, 368, 372 Protein nitrogen, 126, 369, Prothebaine, 158-59 Proteolytic enzymes, 366, 373, 445 Proteriochromonas, 8 Protoalkaloids, 145, 151, 153, 157-61, 164 Protochlorophyll, 4, 455, 465 Protonema, 33 Protoplasm hydration, 369 viscosity, 365, 369-70, 374, 380 Protoplast, 89-90, 212, 333, Protosiphon botyroides, 43 Provascular tissue, 232-34 Pruning carbohydrates and, 414 Prunus amygdalus, 178 Prunus avium, 305 Prunus armeniaca, 191, 305 Prunus cerasus, 213-14 Prunus domestica, 304 Prunus persica, 191-200, Pseudomonas seruginosa, Pseudomycelia, 330, 332 Pteridophytes apex in, 226-27 Purines, 26 Purple bacteria, 85, 90 Purpurogallin-like pigments,

Putrescine, 146-48

Pyridoxamine, 51

Prymensium parvum, 49 Pyridine nucleotide quantum requirements for reduction, 81, 87-89, 116 Pyridine nucleotide-cytochrome C reductase, Pyridine ring, 145, 149-51 Pyridinium, 272, 275 Pyrodinium behamense, 41 Pyridoxal phosphate decarboxylation co-factor, 157 Pyrolidine, 146-48 Pyrrol, 9 △-pyrrolidine-5-carboxylate decarboxylation of, 148 Pyrrolidine ring nicotine, 145-46 △-pyrroline-2-carboxylic acid, 147, 155 Pyrrolizidine aminoalcohol ester, 148 Pyrus communis, 304 Pyrus malus, 200 Pyruvate, 114, 122, 125, 128, 211

Q

Quantasome, 6 Quantum requirement, 77-78, 88 yield, 460 Quanternary ammonium compounds, 272, 279-91, 293 carbamates, 275 Quercus spp., 194 Quercetin, 446 Quinaldinium, 273, 275 Quinicerine, 80, 93-94 Quinine synthesis pathway, 153 Quinoline ring from tryptophan, 153-54 Quinolium, 273, 275 Quinolizidines biosynthesis, 148 Quinone, 78-79, 82, 95, 444, 447-48

R
Radial leaf formation, 239-

Radiation
effects
morphogenesis, 225,
247
injury, 405
solar and climate, 346-47,
411-12, 417, 422
tolerance, 405
Radioautography, 25

Radiocarbon

studies in photosynthesis, 103-7 Radish leaf test, 295 Ranuneulus glaciales, 354, 357 Rannoculus scleratus, 201 Raphanus sativus, 33, 402 Rauvolfia alkaloids, 153-54 Rauvolfia serpentina, 153 Recapitulation theory, 244 Receptacle, 304, 306 Red-far red light, 199, 293, 463 Red light effects, 27 Reducing agents, 83, 103 Reducing sugars, 318 Reductase, 91 Reflectance spectra, 467-68 Rejuvination dry shoot, 246 Relative dormancy, 197 Reproduction capacity for, 242 organs drought sensitivity of, 382 morphogenesis and, 249 Reserpine, 153 Residual meristem, 231, 234 Resistant sporangea, 329, 338-40 Respiration capacity, 356-57, 445 chloroplasts and, 121 DNA level and, 258 dormancy, 212 drought hardening and, 259, 377 heat resistance and, 368-69, 382, 391 inhibition, 95 nitrate reduction and, 63, 65 pollen, 262, 264 pollen storage and, 260 Respiratory pigments, 464-65 Rest period plant survival and, 185-204, 214-15, 312 Rosa arvensis, 307, 310 Rosa rugosa, 310 Rosa spinosissima, 310 Retronecine, 148 Rhododendron, 352-54, 383-Rhododendron ferrugineum, 352 Rhodomel subfusa, 5 Rhodomicrobium vannielii, 77, 90 Rhodopseudomonas palustris, 39, 74

Rhodosorus marinus

lamellae size in, 5

Rhodospirillum, 41, 66

tolerance, 176-79

Rhodospirillum molishianum 83
Rhodospirillum rubrum
photosynthesis in, 76-93
Rhodotypos kerroides, 200
Rhodovibrio, 76
Rhyzome
bud development, 232
Ribes nigrum, 214, 305
Riboflavin, 67
phosphate, 133, 137
Ribosides, 26
Ribonuclease, 289
Ribosomes, 22-23, 28, 31-
32, 328
RNA, 213-14, 255, 263,
331-32, 339, 372, 380
development in plant cells,
17-34
RNAase, 17-21, 28, 30, 33
Rice, 136, 279, 283, 428
Ricinine, 146, 151, 158
Ricinus
nicotine synthesis, 151
Root crops
tissue analysis 428
Root factor, 24
Roots
culture and, 230, 240
formation, 247, 283
hardening, 379
heat resistance, 367, 372
mineral uptake in, 173-81,
290-91, 426, 428-29,
435
moisture and, 417, 419
respiratory pigments, 414
secretion and wind, 373
Rose bengale
absorption spectrum, 456,
459
Rosette plants, 195, 279
Rhubrum heme protein, 77,
90-91
Rubber
tissue analysis, 428
Rubidium, 179
Rubus strigosus, 305 Rumex acetosella, 243
Rumex acetosella, 243
Rumex crispus, 195
Rumex scutatus, 350
Ruppia maritima, 424
Ruppia maritima, 424 Rutin, 446
Rye
ergot infection in, 153
Ryegrass, 176, 179
S
Saccharomyces carlsber-
geneie 331

gensis, 331 Saccharum, 259-60

absorption, 425

osmotic pressure of, 423-

Saline soils

transport, 178 Salvia, 279 Saxifraga caesia, 353 Scale leaves, 236 Scarification, 196 Scenesesmus, 38, 41, 43, 46, 62, 64-65, 108, 124, 136, 138, 397 Scendesmus quadricauda nitrite accumulation in, 62 Schyophylum commune, 329 Schizosaccharomyces pombe, 332, 336 Schramm's penol method, 33 Scion ion uptake in, 176 Sclerification endocarp, 313 Scopolamine, 144, 159 Scopoletin, 446 Scopolin, 446 Scorch, 367-68 Scree plants, 350-51 Scytonemataceae, 47 Seaweeds culture of, 51 Secondary dormancy, 191 198, 201, 208, 211-13 Sedoheptulose, 103 Sedoheptulose-1,7-diphosphate, 110, 115 Sedoheptulase phosphate, 108-9 Sedoheptulose 7 phosphate, 118 Seed coat, 196, 212 Seeds after-ripening, 188 dormancy, 185, 201, 208 germination, 189-204 growth regulators in, 303, 307-8, 312, 314, 315-16, 318 light sensitive, 197-99 temperature requirement in rest, 189 Seedlings dwarfism, 200 heteroblastic development in, 242-43 Selective ion uptake, 176 Selective light scatter, 453-54 Selenate, 58 Selenium 44, 335 Selenomethionine, 40, 335 Self-incompatibility, 263 Selfing, 410 Self sterility, 263 Semidormancy, 197 Senescence, 24, 443, 445-46 Sequoia, 226 Serine as carbon donor, 42, 130-31, 135, 146

Serpintine, 153, 180 Sewage cultures and, 393 Sexual compatibility, 265 Sexual reproduction hormones and, 335 Shade, 347, 414 Shikimic acid, 152 Shoot apex, 226-31, 235, 240, 244, 249 growth, 190, 199, 227, 284 morphogenesis, 225-54 types, 244 Sieversea reptane dry weight product, 357 Silene inflata, 180, 358 Silene maritima ultraviolet light and, 359 Silicate, 38, 58 Silicone, 428, 435 Sirenin, 335 Skelatonema costatum, 37 Snow effect on vegetation, 346-51 Sodium toxicity, 178 Sodium uptake, 176-77, 179 Sodium chloride, 127, 424 Sodium potassium chlorophyllen, 292 Sodium silicate, 435 Soil extract, 37-38, 41, 46, 49 solution osmotic pressure, 423-25 oxygen, 417-18 pH, 433 temperature, 347, 413-14 toxicity, 417, 435-36 water balance, 349, 351, 365, 411-25 Solanaceae, 159 Solanodine, 154 Solanum melongena, 305 Solanum tuberosum, 194, 239 Solenostele, 234 Soluble enzymes, 125 Solute absorption, 173 Sorbose, 331 Sorbus aucuparia, 200 Soybean chemical resistance, 288iron chlorosis mutant, 172, 176 Space theory leaf primordium development, 241 Sparteine, 145, 149 Spatial requirement leaf primordia, 241 Spinach leaves enzymes in, 26, 60, 65-66, 122, 129, 130, 133-34

growth and, 189, 201, 286,

heat resistance and, 368,

oxygen supply and, 211-13

pollen effects, 60, 256-57,

Tensiometer, 417, 420, 423 Terminal buds, 186, 205-6,

in exine, 256-57, 276, 297 Tetragonia expansa, 402 Tetrahydroanabasine, 151

Tetrahydro-isoquinoline, 151

Tetramethyl-p-phenylenedia-

Tetramethyl-p-phenylenedia-

substrate in carbon dioxide

photooxidation of, 78

assimilation, 88

Tetrazoleum blue, 78-79,

Term inal oxidases, 447

5,7,3',4' tetrahydroxy-

flavanol, 446

mine, 95 Tetramethyl-putrescine, 145 Tetrahydrophthalic acid, 278

mine

Tetrathionate

94, 332

senescence, 447

Titanium, 176, 179

spectroscopy of, 451-70

photosynthesis and, 354-

humidity and, 348-49

maturity and, 413-14

metabolism and, 368

56, 394, 413

259, 264

244

Terpine

Tendrils, 243, 287

294, 411

371

quantasome composition, 6 Spiraea japonica long day germination, 199 Split pea stem test, 273 Sporangia, 338-39 Spore cells, 336-37 Sporoderm, 256-57 Sporophylls, 237 Sporatrichum schenckii, 332 Sporulation, 336-40 Sprouting temperature dependence of, 194 Stalk cells, 336-37 Stamens, 304, 314 Standard nitrogen index, 432 Standard phosphorus index carbohydrate and, 431 Starch, 213, 317-18, 365, 379, 445 Starvation differentiation, 337 Stellares media, 359 Stem elongation, 226, 244, 271-73, 279-82, 286-87, 347, 411, 418-19 mineral, 428-30 wounding flower initiation and, 285 Stenospermocarpy, 310 Sterile appendages, 249 Steroid biogenesis, 146, 154-56 161 hormone, 335 pollen germination, 263 Stigmastenol synthesis of, 336  $\Delta$ -stigmastin-3 $\beta$ -o1, 336 Stigoclonium, 45 Stilphonophleum anthoxanthoides, 357 Stomata, 132-33, 136, 348-51, 355, 378 Stratification, 190, 193, 195, 197, 200 Streptocarpus wendlandii, 29 Style, 262, 305 Stypocaulus, 51 Subapical meristem, 226-27, 283, 297 Sucrose, 424 accumulation, 318, 412 carbon pathway, 102, 109, 115 effect on RNA ratio, 32 kinetin and, 25 vascular induction, 232-33 Succinamic acids, 273, 278 Succinate, 79-83, 87-88, 91 97, 122, 128, 150-51, 155 Succinic dehydrogenase, 90, 123 Succinoxidase, 125-26, 339

Succulents, 123, 363, 369, 371 Sugar accumulation, 177, 366, 411 beet, 130, 136, 177, 412, 430 cane, 411, 413, 416, 428, 432 crop-logging, 410, 428 osmosis and, 307 phosphates carbon reduction intermediates, 191, 112, 114-15, 117 photosynthesis, 355 pollen and, 258, 261, 337 vascular induction, 232-34 Sulfate, 58, 66, 76, 79, 94, 175-76 Sulfolipase, 9 Sulfolipids extracts from Ochromonas danica, 6, 9, 52 Sulfonic acid, 11 Sulfur, 73, 332-33, 431, 435 bacteria, 73-74 dioxide, 45 Sulphuric acid, 259 Symbiosis in algae, 44 Synchronous culture, 339 Synechococcus, 390-91 Syracosphaera, 48, 49 Syringa vulgaris, 213-14, 231-32

Thea, 203 Theaflavins, 444 2,4,5-T, 306, 310, 319 Thebaine Tannin, 212, 289 methyl donor for, 146, 151, 158-59, 161 Tapetum Theogallin, 443 physiology of, 255-56, 375 Tap-root ratio, 287 Thermophilic bacteria, 372 Taraxicum cocshghiz, 196 Thiamine Taraxicum megalorhizon, 195 in algal culture, 38, 40, 41 Taraxacum officinale, 402 Thirohodaceae, 74 Tartaric acid, 131-32 Thiosulfate, 78, 88 Thiouracil, 21, 27, 29, 40 Tartaric dehydrogenase, 132 Taxodiaceae, 286 Thiourea, 201-4 Taxodium distichum, 204 TCA cycle, 124, 147-48, 150, Thalaspi arvense, 193 Thorns 155, 215 development of, 248 Threonine, 39 Thylakoids, 4, 6 Thymadine, 30, 258 curing, 428, 443-44 Teicholytic enzymes, 335 Thymol, 275-77 Tellurate, 58 Thyoscyamine, 144 Temperature alpine plant, 356, 359-60 Tellering bud break, 189 heat resistance and, 374 development and, 32, 248 Tissue dormancy and, 186, 194, analysis 196, 206, 208 mineral nutrients, 428-36 flowering and, 283-84, 412 culture, 225, 235 fruit growth and, 287, moisture, 413-20, 432

germination and bud break,

189-204, 260

Tropaeolum majus

Tobacco, 20-26 curing, 445-47 mosaic virus, 29, 173, 289 Tomato, 20, 59, 255-58, 281, 317-18, 321-22, 365, 380 growth substance and, 304-11 Tolypothrix tennis, 46 Tonoplast, 443, 446-47 Topophysis, 247-48 Toxic elements adaptation to, 169 Toxicity sodium, 178 studies in Ochromonas, 52 TPN photoreduction, 80, 93 Trace elements, 37, 397 Tradiscantia, 3, 255 Transamination, 110, 124, 131, 146, 164, 262 Trans-cinnamic acid, 152 Transhydrogenase, 81 Transketolase reaction in carbon reduction, 108-9 Transleucine, 27 Translocation auxin induced, 318 dormant embryos, 214 of metal ions, 27 seed control of, 320 temperature and, 27 Transmethylation, 146, 158 Transpiration, 348, 350-51, 367-68, 371, 373, 414, 417, 422144 Transport kinetin induced, 26 metabolism in, 328 Trehalose, 340 Trepenoids, 161 2, 4, 5-trichlorophenoxyacetic acid, 209 Trichocerine, 145 Trichophyton menlagrophytes, 337 Trienoic acid, 12 Trifolium repens, 176, 180 5, 7, 4-trihydroxyflavanone, 209 Triidobenzoic acid, 24, 296 4, 6, 7-trimethoxy-laudanosoline, 159 Tri-N-butyl ammonium compounds, 278 Tri-N-butyl phosphonium compounds as growth retardants, 278 Triphenyl-methyl phosphonium chloride, 273 Triose phosphate dehydrogenase, 117 Triticum, 259 Triticum aestivum, 279 Triticum vulgare, 31 Tritium, 24, 149, 153, 155

apical activity in, 228 Tropine, 145, 147-49, 155 True dormancy, 187-89, 194-95, 197, 200-2 Trypsin, 31 Tryptamine, 156 Tryptophan algal deficiency of, 400 alkaloid synthesis, 145-57, 161 Tsuga canadensus, 199 Tube nucleus, 258 Tuber crops tissue analysis, 428 Tuberization dormancy and, 206 Tulips growth during rest period, 190 Tunica-corpus, 227 Turgidity, 288, 418, 425 Tyramine, 145-46, 152 Tyrosine alkaloid biosynthesis, 145, 151-52, 154, 159, 161 II Ubiquinone electron transport, 79, 82, 88, 90, 92-93 Ulbricht sphere, 460-61 Ulex europaeus leaf modification in, 243, 249 Ulmus, 242 Ulothrix sublillisima, 280, 295-96 Ultrasonics in culture purification, 37 Ultraviolet radiation alpine plants and, 359 chloroplasts and, 405 flower primordia and, 360 germination and, 257 mutant development, 171 pigment protection, 257 pollen storage and, 260 spectroscopy, 455, 463 Ulva lactuca, 51-52 Umbillicaria, 355 Unit membrane, 3, 5, 12-13, Uracil, 20-21, 27, 29, 31, 40 culture enrichment, 393 cycle, 43 Uric acid, 43 Uridine dyphosphoglucose synthetase, 337 Uridine triphosphate, 20 Uridylic acid flower induction, 33 Ustilago maydis, 329, 340 Utricularia intermedia after-rest in, 194

dormancy in, 197 Utricularia vulgaris after-rest in, 194 dormancy in, 197

V

Vaccinium angustifolium, 305 Vaccinium corymbosum, 305 Vaccinium myrtillus, 352 Vaccinium vitis idea, 353 Vaccinium vitis idea, Vacuoles, 255, 365, 444 Valine, 27 Valinomycin, 86, 95 Vallisneria, 228 Valonia, 334 Vanillin, 444 Vapor pressure elevation and, 348 Vascular development, 173-75, 230-36 Vegetative growth, 228, 242, 282-87, 317, 330 Vernalization, 33 development and, 32, 225 flower initiation and, 283-84 Vitamin B<sub>6</sub>, 49 Vitamin B<sub>12</sub>, 38-39, 42 Vitamin K3 in nitrate reductase, 59 Vitamins plant content, 402 Vicia faba, 66, 228 Vigna sesquipedalis, 17, 22, 27, 63, 68 Vigna sinensis, 289 Viola tricolor arvensis, 195 Viologen, 94
Vitaceae, 131-32
Vitis vinifera, 177-78, 305 Volvocales B<sub>12</sub> requirement, 42

W

Ward-bodies, 264 Water balance, 351-53 deficiency, 288, 364-65, 377 forms plant, 248 number, 425 pollen and, 256, 259, 261 relations dormancy and, 205 supply morphogenesis and, 248 uptake, 261, 288, 417-23 Wheat coleoptile bioassay, 316 Weigela, 285 Wilting, 349, 365-66, 374, 379, 418-21, 424

Winter
buds
dormancy and, 191, 206
dormancy
induction of, 356-57
drought, 352-54
Wolffia, 226
Wood
absorbance spectra, 464
Wound
hormones, 320
regeneration
apical, 229-33

x

Xanthine oxidase nitrate reduction, 68 Xanthium pennsylvanicum floral induction, 29 leaf extracts, 27 Xeromorphic structure, 243, 248, 365, 378 Xerophytes drought adaptation, 381 heat resistance and, 367 pollen, 259
X-irradiation pollen tube growth and, 264
X-ray induced mutant, 171
Xylem differentiation, 234-36, 282
Xyulose 5 phosphate

Y

transketolase reaction on,

118, 128

Yeast

budding, 332-33 cell wall, 331 demorphism, 330-32 mating in, 336 respiratory pigments, 464 Yield drought and, 371 factors affecting, 409-42 hardening and, 379 Yohimbine fragment condensation in, 157 tartarate, 336

 $\mathbf{z}$ 

Zalenski's law
leaf formation, 243, 246-47
Zea mays, 3, 12, 59, 173, 179, 259, 315
Zephyranthes sp., 309, 312, 314
Zinc, 4, 20, 176, 180, 370, 435
Zinnia elegans, 204, 283, 289, 294
Zoospores cell wall of, 334
Zooxantheliae, 37, 44
Zygote development of plant from, 242

# **CUMULATIVE INDEXES**

### **VOLUMES 6-15**

### INDEX OF CONTRIBUTING AUTHORS

#### A

Aberg, B., 8:153 Addicott, F. T., 6:211 Agurell, S., 15:143 Allsopp, A., 15:225 Arnon, D. I., 7:325 Ashton, F. M., 8:275 Axelrod, B., 7:267

#### B

Barber, D. A., 11:127
Bartnicki-Garcia, S., 15: 327
Bassham, J. A., 15:101
Bawden, F. C., 10:239
Bayley, S. T., 12:35
Beakbane, A. B., 8:217
Beevers, H., 7:267
Bennett, C. W., 7:143
Benson, A. A., 15:11
Bentley, J. A., 9:47
Bernstein, L., 9:25
Billings, W. D., 8:375
Bogorad, L., 9:417
Bollard, E. G., 11:141
Bonner, W. D., Jr., 8:427
Borthwick, H. A., 7:299
Bradbeer, C., 10:197
Braun, A. C., 13:533
Brian, P. W., 8:413
Briggs, W. R., 14:311
Brodie, H. W., 8:275
Brown, J. C., 7:171; 14: 93
Broyer, T. C., 10:277
Bünning, E., 7:71
Burg, S. P., 13:265

### 0

Burr, G. O., 8:275

Burris, R. H., 10:301 Butler, W. L., 15:451

Carnahan, J. E., 14:125 Castle, J. E., 14:125 Cathey, H. M., 12:369; 15:271 Chance, B., 9:499 Chandler, W. H., 10:1 Cheadle, V. I., 8:349 Cheniae, G. M., 13:225 Chouard, P., 11:191 Christensen, J. J., 6:367 Clayton, R. K., 14:159 Clements, H. F., 15:409 Clendenning, K. A., 8:137 Coleman, R. E., 8:275 Collander, R., 8:335 Crane, F. L., 12:13 Currier, H. B., 8:349

#### D

Dainty, J., 13:379
Danielson, C. E., 7:215
De Vay, J. E., 6:367
Dimond, A. E., 6:329;
10:257
Doorenbos, J., 10:147
Ducet, G., 13:171
Duysens, L. N. M., 7:25

#### E

Eaton, F. M., 6:299 Embleton, T. W., 9:175 Emerson, R., 9:1 Epstein, E., 7:1; 15:169 Esau, K., 8:349

### F

Fawcett, C. H., 12:345 Fogg, G. E., 7:51 Folkes, B. F., 9:245 Forsyth, W. G. C., 15:443 French, C. S., 14:181 Frenkel, A. W., 10:53 Fried, M., 12:91

### G

Galston, A. W., 11:239 Gauch, H. G., 8:31 Gautheret, R. J., 6:433 Gerloff, G. C., 14:107 Gibbs, M., 10:329 Golueke, C. G., 15:387 Goodwin, T. W., 12:219 Greenidge, K. N. H., 8: 237 Gruen, H. E., 10:405

### H

Hackett, D. P., 10:113 Haemmerling, J., 14:65 Hagan, R. M., 12:265
Hansch, C., 6:157
Hartt, C. E., 8:275
Hayward, H. E., 9:25
Henckel, P. A., 15:363
Hendricks, S. B., 7:299
Hilton, J. L., 14:353
Hoch, G., 12:155
Holly, K., 9:311
Horsfall, J. G., 10:257
Hull, H. M., 14:353
Humphries, E. C., 14:385
Hutner, S. H., 15:37

### T

Iljin, W. S., 8:257 Isherwood, F. A., 13:329

#### ,

Jacobs, W. P., 13:403 Jaffe, L. F., 9:359 Jansen, L. L., 14:353 Jefferies, R. L., 15:169 Jones, W. W., 9:175

### K

Kamiya, N., 11:323 Kandler, O., 11:37 Kessler, E., 15:57 Ketellapper, H. J., 14: 249 Klein, S., 13:437 Kok, B., 12:155 Koller, D., 13:437 Kortschak, H. P., 8:275 Kramer, P. J., 6:253 Krasnovksy, A. A., 11: 363 Krauss, R. W., 9:207 Kremers, R. E., 10:185 Kursanov, A. L., 7:401

### 1

Langridge, J., 14:441 Laties, G. G., 10:87 Leopold, A. C., 9:281 Linskens, H. F., 15:255 Liverman, J. L., 6:177 Lundegårdh, H., 6:1 Lynch, R. S., 6:211 M

McCready, C. C., 9:311
Mapson, L. W., 9:119;
13:329
Marré, E., 12:195
Mayer, A. M., 13:437
Menke, W., 13:27
Mercer, F., 11:1
Middleton, J. T., 12:431
Miller, C. O., 12:395
Millerd, A., 13:559
Miroy, N. T., 10:223
Mohr, H., 13:465
Mothes, K., 6:393; 13:129
Muir, R. M., 6:157

N

Näf, U., 13:507 Neish, A. C., 11:55 Newcomb, E. H., 14:43 Nicholas, D. J. D., 12:63 Nickerson, W. J., 15:327

0

Oota, Y., 15:17 Osterhout, W. J. V., 8:1 Oswald, W. J., 15:387 Overbeek, J. van, 7:355

T

Paech, K., 6:273 Phinney, B. O., 11:411 Pirie, N. W., 10:33 Pirson, A., 6:71 Poljakoff-Mayber, A., 13:437 Pollard, J. K., 8:65 Porter, H. K., 13:303 Provasoli, L., 15:37 Purves, W. K., 11:239

R

Raggio, M., 13:109 Raggio, N., 13:109 Ramstad, E., 15:143 Raney, F. C., 12:265 Ranson, S. L., 11:81 Raschke, K., 11:111 Ray, P. M., 9:81 Reinert, J., 10:441 Reinbothe, H., 13:129 Reuther, W., 9:175 Robertson, R. N., 8:11 Rogers, W. S., 8:217 Rosenberg, A. J., 13:171 Rosenberg, J. L., 8:115 Rufelt, H., 12:409 Russell, R. S., 11:127; 14:271

S

Sadasivan, T. S., 12:449
Salisbury, F. B., 12:293
Sax, K., 13:489
Scott, K. J., 13:559
Setterfield, G., 12:35
Shantz, E. M., 10:379
Shapiro, R. E., 12:91
Siegel, A., 11:277
Slatyer, R. O., 13:351
Smith, J. H. C., 14:181
Smith, L., 9:449
Smith, P. F., 13:81
Stahmann, M. A., 6:351;
14:137
Stanley, R. G., 10:223
Steemann Nielsen, E.,
11:341
Steinberg, R. A., 9:151
Stern, H., 7:91
Steward, F. C., 8:65;
10:379
Stewart, I., 14:295
Stiller, M., 13:151
Stolwijk, J. A. J., 7:373
Stout, P. R., 10:277
Stowe, B. B., 8:181
Stuart, N. W., 12:369
Stumpf, P. K., 10:197
Sweeney, B. M., 14:411

т

Takahashi, D., 8:275
Talling, J. F., 12:133
Tamiya, H., 8:309
Tanimoto, T., 8:275
Taylor, J. H., 12:327
Teas, H. J., 8:393
Teubner, F. G., 10:13
Thimann, K. V., 14:1
Thomas, M., 11:81

Thomas, M. D., 6:135 Toole, E. H., 7:299 Toole, V. K., 7:299 Torrey, J. G., 7:237 Tranquillini, W., 15:345 Tso, T. C., 9:151 Ts'o, P. O. P., 13:45

T

Ulrich, R., 9:385 Umbarger, H. E., 14:19

V

Vaadia, Y., 12:265 van Niel, C. B., 13:1 Varner, J. E., 12:245 Vegis, A., 15:85 Vernon, L. P., 15:73 Virtanen, A. I., 12:1 Vishniac, W., 6:115

W

Walker, J. C., 6:351
Walter, H., 6:239
Wareing, P. F., 7:191
Wassink, E. C., 7:373
Webster, G. C., 6:43;
12:113
Wellensiek, S. J., 19:147
West, C. A., 11:411
Wheeler, A. W., 14:385
Wildman, S. G., 11:277
Williams, R. F., 6:25
Wilson, L. G., 13:201
Wittwer, S. H., 10:13
Wolken, J. J., 10:71
Wood, R. K. S., 11:299
Woodford, E. K., 9:311

Y

Yamaki, T., 8:181 Yarwood, C. E., 7:115 Yemm, E. W., 9:245 Yocum, C. S., 11:25

Z

Zelitch, I., 15:121 Zill, L. P., 13:225 Zimmerman, M. H., 11:167

# INDEX OF CHAPTER TITLES

# **VOLUMES 6-15**

CELL STRUCTURE AND FUNCTION		
The Structure of the Chloroplast	J. J. Wolken	10:71-86
The Submicroscopic Structure of the Cell	J. J. Wolken F. Mercer	11:1-24
Structure and Function of Mitochondria	F. L. Crane	12:13-34
Structure and Physiology of Cell Walls	G. Setterfield, S. T. Bayley	12:35-62
Structure and Chemistry of Plastids The Ribosomes-Ribonucleoprotein	W. Menke	13:27-44
Particles	P. O. P. Ts'o	13:45-80
The Integration of Metabolic Pathways	H. E. Umbarger	14:19-42
Cytoplasm-Cell Wall Relationships Nucleo-Cytoplasmic Interactions in	E. H. Newcomb	14:43-64
Acetabularia and Other Cells	J. Haemmerling	14:65-92
Plant Membrane Lipids	A. A. Benson	15:1-16
RNA in Developing Plant Cells	Y. Oota	15:17-36
MINERAL NUTRITION		20121 00
Functional Aspects in Mineral		
Nutrition of Green Plants	A. Pirson	6:71-114
Iron Chlorosis	J. C. Brown	7:171-90
Mineral Nutrition of Plants	H. G. Gauch	8:31-64
Mineral Nutrition of Tree Crops	W. Reuther, T. W. Embleton,	
•	W. W. Jones	9:175-206
Foliar Absorption of Mineral Nutrients	S. H. Wittwer, F. G., Teubner	10:13-32
The Macronutrient Elements	T. C. Broyer, P. R. Stout	10:277-300
Minor Mineral Nutrients	D. J. D. Nicholas	12:63-90
Soil-Plant Relationships in Ion Uptake	M. Fried, R. E. Shapiro	12:91-112
Mineral Analysis of Plant Tissues	P. F. Smith	13:81-108
Interactions Involving Nutrient		
Elements	J. C. Brown	14:93-106
Comparative Mineral Nutrition of		
Plants	G. C. Gerloff	14:107-24
Chelation in the Absorption and		
Translocation of Mineral Elements	I. Stewart	14:295-310
Nutrition of Algae	S. H. Hutner, L. Provasoli	15:37-56
NITROGEN METABOLISM		
Nitrogen Metabolism	G. C. Webster	6:43-70
Nitrogen Fixation by Photosynthetic		
Organisms	G. E. Fogg	7:51-70
Plant Proteins	C. E. Danielson	7:215-36
Nitrogen Metabolism in Plants: Ten		
Years in Retrospect	F. C. Stewart, J. K. Pollard	8:65-114
The Metabolism of Amino Acids and		
Proteins in Plants	E. W. Yemm, B. F. Folkes	9:245-80
Leaf Proteins	N. W. Pirie	10:33-52
Nitrogen Nutrition	R. H. Burris	10:301-28
Nitrogen Fixation	C. S. Yocum	11:25-36
Some Aspects of the Structure and Behavior of Tobacco Mosaic		
Virus	A. Siegel, S. G. Wildman	11:277-98
Some Aspects of Amino Acid		
Synthesis in Plants and		
Related Subjects	A. I. Virtanen	12:1-12
Protein Synthesis	G. Webster	12:113-32
Root Nodules	M. Raggio, N. Raggio	13:109-28
Urea, Ureides, and Guanidines in		
Plants	H. Reinbothe, K. Mothes	13:129-50
Nitrogen Fixation	J. E. Carnahan, J. E. Castle	14:125-36
Plant Proteins	M. A. Stahmann	14:137-58
Nitrate Assimilation by Plants	E. Kessler	15:57-72
PHOTOSYNTHESIS	***	
Biochemical Aspects of Photosynthesis	W. Vishniac	6:115-34
Effect of Ecological Factors on	M D MI	0.105 50
Photosynthesis	M. D. Thomas	6:135-56

# INDEX OF CHAPTER TITLES

Energy Transformations in		
Photosynthesis	L. N. M. Duysens	7:25-50
Phosphorus Metabolism and		
Photosynthesis	D. I. Arnon	7:325-54
Photochemistry of Chlorophyll	J. L. Rosenberg	8:115-36
Biochemistry of Chloroplasts in		
Relation to the Hill Reaction	K. A. Clendenning	8:137-52
The Quantum Yield of Photosynthesis	R. Emerson	9:1-24
Cytochromes in Plants	L. Smith, B. Chance	9:449-82
Light Induced Reactions of Bacterial		
Chromatophores and Their		
Relation to Photosynthesis	A. W. Frenkel	10:53-70
The Structure of the Chloroplast	J. J. Wolken	10:71-86
Energy Transfer Through		
Phosphorylation Mechanisms		
in Photosynthesis	O. Kandler	11:37-54
Productivity of the Oceans	E. Steemann Nielsen	11:341-62
The Primary Processes of Photo-	2, 5,000,000,000,000,000,000,000,000,000,	
synthesis in Plants	A. A. Krasnovsky	11:363-410
Photosynthesis Under Natural	and the same and the same	11.000-110
Conditions	J. F. Talling	12:133-54
Photosynthesis	G. Hoch, B. Kok	12:155-94
Biosynthesis and Function of	G. Hoen, D. Rok	12.100-01
	T. W. Goodwin	12:219-44
Carotenoids	1. W. GOOGWIN	12:215-44
The Present Status of the Comparative	C. B. van Niel	19.1 00
Study of Photosynthesis		13:1-26
The Path of Carbon in Photosynthesis	M. Stiller	13:151-70
Photosynthesis: Primary Physical and	D W Claster	14.150 00
Chemical Processes	R. K. Clayton	14:159-80
The Major and Accessory Pigments in	* ** * * * * * * * * * * * * * * * * * *	44.404.004
Photosynthesis	J. H. C. Smith, C. S. French	14:181-224
Bacterial Photosynthesis	L. P. Vernon	15:73-100
Kinetic Studies of the Photosynthetic		
Carbon Reduction Cycle	J. A. Bassham	15:101-20
RESPIRATION		
Mechanisms of Carbohydrate Break-		
down in Plants	B. Axelrod, H. Beevers	7:267-98
Soluble Oxidases and Their Functions	W. D. Bonner, Jr.	8:427-52
Cytochromes in Plants	L. Smith, B. Chance	9:449-82
Respiratory Mechanisms in Higher		
Plants	D. P. Hackett	10:113-46
Metabolism of Carbon Compounds	M. Gibbs	10:329-78
Crassulacean Acid Metabolism	S. L. Ranson, M. Thomas	11:81-110
Structure and Function of Mitochondria	F. L. Crane	12:13-34
Phosphorylation in Higher Plants	E. Marré	12:195-218
Leaf Respiration	G. Ducet, A. J. Rosenberg	13:171-200
Respiratory Mechanisms in Plants		
Including Organic Acid Metabolism	I. Zelitch	15:121-42
GENERAL METABOLISM		
Colour Development in Flowers	K. Paech	6:273-98
Physiology of Alkaloids	K. Mothes	6:393-432
Mechanisms of Carbohydrate Break-		
down in Plants	B. Axelrod, H. Beevers	7:267-98
Soluble Oxidases and Their	2, 11101104, 11, 2007010	
Functions	W. D. Bonner, Jr.	8:427-52
Metabolism of Ascorbic Acid in Plants:	W, D, Dollier, CT.	
Part I, Function	L. W. Mapson	9:119-50
Postharvest Physiology of Fruits	R. Ulrich	9:385-416
The Biogenesis of Flavonoids	L. Bogorad	9:417-48
The Lignins	R. E. Kremers	10:185-96
Fat Matabolism in Higher Plants	P. K. Stumpf, C. Bradbeer	10:197-222
	M. Gibbs	10:329-78
Metabolism of Carbon Compounds	M. 01005	10.020-10
Biosynthetic Pathways of Aromatic	A. C. Neish	11:55-80
Compounds		
Crassulacean Acid Metabolism	S. L. Ranson, M. Thomas	11:81-110
Pectic and Cellulolytic Enzymes in	R, K, S, Wood	11:299-322
Plant Disease	It, A. D. WOOL	11.400-022

Biosynthesis and Function of		
Carotenoids	T. W. Goodwin	12:219-44
Biochemistry of Senescence	J. E. Varner	12:245-64
Physiology of Mitosis and Meiosis Metabolism of Sulfate: Sulfate	J. H. Taylor	12:327-44
Reduction	L. G. Wilson	13:201-24
Lipid Metabolism	L. P. Zill, G. M. Cheniae	13:225-64
The Physiology of Ethylene Formation	S. P. Burg	13:265-302
Synthesis of Polysaccharides of Higher Plants	H. K. Porter	
Ascorbic Acid Metabolism in Plants:		13:303-28
Part II. Biosynthesis	F. A. Isherwood, L. W. Mapson	13:329-50
The Integration of Metabolic Pathways	H. E. Umbarger	14:19-42
Biochemistry of Plant Steroids Biochemical Aspects of Temperature	E. Heftmann	14:225-48
Response	J. Langridge	14:441-62
Alkaloid Biogenesis	E. Ramstad, S. Agurell	15:143-68
WATER RELATIONS		
The Water Economy and Hydrature of Plants	H. Walter	e.020 E0
Water Relations of Plant Cells and	n. watter	6:239-52
Tissues	P. J. Kramer	6:253-72
Drought Resistance in Plants and		
Physiological Processes Heat Transfer Between the Plant and	W. S. Iljin	8:257-74
the Environment	K. Raschke	11:111-26
The Relationship Between Salt Uptake and the Absorption of Water by	AL AMADOISTO	11.111-20
Intact Plants	R. S. Russell, D. A. Barber	11:127-40
Plant Water Deficits and Physiological	it, b. itabicit, b. A. Darber	11.121-10
Processes	Y. Vaadia, F. C. Raney,	
	R. M. Hagan	12:265-92
Physiology of Wilt Disease	T. S. Sadasivan	12:449-68
Internal Water Relations of High		
Plants	R. O. Slatyer	13:351-78
Stomatal Physiology	H. J. Ketellapper	14:249-70
ABSORPTION AND TRANSLOCATION Mechanisms of Absorption,		
Accumulation, and Secretion of Ions	H. Lundegårdh	6:1-24
Redistribution of Mineral Elements	ii, Danachii ai	0.1-21
During Development	R. F. Williams	6:25-42
Mineral Nutrition of Plants: Mechan-	*** * * *******************************	0.20-12
isms of Uptake and Transport	E. Epstein	7:1-24
Absorption and Translocation of	L. Lipatein	1.1-24
Plant Regulators	J. van Overbeek	7:355-72
Apparent Free Space	G. E. Briggs, R. N. Robertson	
		8:11-30
Ascent of Sap	K. N. H. Greenidge	8:237-56
Permeability of Plant Cells	R. Collander	8:335-48
Physiology of Phloem	K. Esau, H. B. Currier,	0.040.04
	V. I. Cheadle	8:349-74
Foliar Absorption of Mineral Nutrients Active Transport of Salt into Plant	S. H. Wittwer, F. G. Teubner	10:13-32
Tissue	G. G. Laties	10:87-112
The Relationship Between Salt Uptake and the Absorption of Water by		
Intact Plants	R. S. Russell, D. A. Barber	11:127-40
Transport in the Xylem	E, G, Bollard	11:114-66
Transport in the Phloem	M. H. Zimmermann	11:167-90
Physics and Chemistry of Protoplasmic		
Streaming	N. Kamiya	11:323-40
Ion Transport and Electrical Potential		
in Plant Cells	J. Dainty	13:379-402
The Extent and Consequences of the		
Uptake by Plants of Radioactive		
Nuclides	R. S. Russell	14:271-94
Chelation in the Absorption and		
Translocation of Mineral Elements	I. Stewart	14:295-310

The Genetic Basis of Selective Ion		
Transport in Plants	E. Epstein, R. L. Jefferies	15:169-84
GROWTH AND DEVELOPMENT		
Chemical Constitution as Related to		
Growth Regulator Action	R. M. Muir, C. Hansch	6:157-76
The Physiology of Flowering Physiology of Abscission	J. L. Liverman F. T. Addicott, R. S. Lynch	6:177-210 6:211-38
Tissue Culture	R. J. Gautheret	6:433-84
Endogenous Rhythms in Plants	E. Bünning	7:71-90
The Physiology of Cell Division	H. Stern	7:91-114
Photoperiodism in Woody Plants	P. F. Wareing	7:191-214
Physiology of Root Elongation	P. F. Wareing J. G. Torrey	7:237-66
Physiology of Seed Germination	E. H. Toole, S. B. Hendricks,	
	H. A. Borthwick, V. K. Toole	7:299-324
Absorption and Translocation of	I was Overheak	7:355-72
Plant Regulators Effects of Light Quality on Plant Growth	J. van Overbeek E. C. Wassink, J. A. J. Stolwijk	7:373-400
Auxin Relations in Roots	B. Aberg	8:153-80
The History Physiological Action	D. Aberg	0.100-00
of the Gibberellins	B. B. Stowe, T. Yamaki	8:181-216
Mass Culture of Algae	H. Tamiya	8:309-34
Effects of Antibiotics on Plants	P. W. Brian	8:413-26
The Naturally Occurring Auxins and		
Inhibitors	J. A. Bentley	9:47-80
Destruction of Auxin	P. M. Ray	9:81-118
Auxin Uses in the Control of Flowering	A G T14	0.001 210
and Fruiting	A. C. Leopold	9:281-310
Herbicides	E. K. Woodford, K. Holly, C. C. McCready	9:311-58
Morphogenesis in Lower Plants	L. F. Jaffe	9:359-84
Photoperiodic Control of Floral	Li, I, build	0.000-01
Induction	S. J. Wellensiek, J. Doorenbos	10:147-84
The Chemical Regulation of Growth (Some Substances and Extracts which Induce Growth and		
Morphogenesis)	F. C. Steward, E. M. Shantz	10:379-404
Auxins and Fungi	H. E. Gruen	10:405-40
Phototropism and Phototaxis	J. Reinert	10:441-58
Vernalization and Its Relation to		
Dormancy	P. Chouard	11:191-238
The Mechanism of Action of Auxin	A. W. Galston, W. K. Purves	11:239-76
Gibberellins as Native Plant		
Growth Regulators	B. O. Phinney, C. A. West	11:411-36
Structure and Physiology of Cell Walls	G. Setterfield, S. T. Bayley	12:35-62 12:245-64
Biochemistry of Senescence Photoperiodism and the Flowering	J. E. Varner	14:410-01
Process	F. B. Salisbury	12:293-326
Physiology of Mitosis and Meiosis	J. H. Taylor	12:327-54
Indole Auxins	C. H. Fawcett	12:345-68
Applied Aspects of the Gibberellins	N. W. Stuart, H. M. Cathey	12:369-94
Kinetin and Related Compounds in		
Plant Growth	C. O. Miller	12:395-408
Geotropism in Roots and Shoots	H. Rufelt	12:409-30
Longevity of Plant Organs: Internal		
Factors Controlling Abscission	W. P. Jacobs	13:403-36
Seed Germination	D. Koller, A. M. Mayer,	19.497 04
Data and Effects of Links on County	A. Poljakoff-Mayber, S. Klein H. Mohr	13:437-64 13:465-88
Primary Effects of Light on Growth	K, Sax	13:489-506
Aspects of Aging in Plants Developmental Physiology of Lower	K, Sax	13.403-300
Archegoniates	U. Näf	13:507-32
Plant Growth Substances; Past, Present	0, 1101	10.00. 02
and Future	K. V. Thimann	14:1-18
Cytoplasm-Cell Wall Relationships	E. H. Newcomb	14:43-64
Nucleo-Cytoplasmic Interactions in		
Acetabularia and other Cells	J. Haemmerling	14:65-92
The Phototropic Responses of Higher Plants	W. R. Briggs	14:311-52

Mechanisms of Herbicide Action	J. L. Hilton, L. L. Jansen,	
	H. M. Hull	14:353-84
The Physiology of Leaf Growth	E. C. Humphries, A. W. Wheeler	14:385-410
Biological Clocks in Plants	B. M. Sweeney	14:411-40
Dormancy in Higher Plants	A. Vegis	15:185-224
Shoot Morphogenesis	A. Allsopp	15:225-54
Pollen Physiology	H. F. Linskens	15:255-70
Physiology of Growth Retarding		
Chemicals	H. M. Cathey	15:271-302
Growth Substances in Fruit Setting		
and Development	J. C. Crane	15:303-26
Biochemical Aspects of Morphogenesis	*** * ** *	
in Algae and Fungi	W. J. Nickerson,	
CERRESC DIVISION OCH	S. Bartnicki-Garcia	15:327-44
STRESS PHYSIOLOGY		
Drought Resistance in Plants and	W 2 W	
Physiological Processes	W. S. Iljin	8:257-74
Physiology of Salt Tolerance	L. Bernstein, H. C. Hayward	9:25-46
Plant Water Deficits and	W W . W . D C D	
Physiological Processes	Y. Vaadia, F. C. Raney,	
70 -4 -1 1 1 At- 70-11 At- 70-	R. M. Hagan	12:265-92
Photochemical Air Pollution Damage		
to Plants	J. T. Middleton	12:431-48
Biochemical Aspects of Temperature		
Response	J. Langridge	14:441-62
The Physiology of Plants at High		
Altitudes	W. Tranquillini	15:345-62
Physiology of Plants under Drought	P. A. Henckel	15:363-86
PATHOLOGICAL PHYSIOLOGY		
Pathogenesis in the Wilt Diseases	A. E. Dimond	6:329-50
Chemical Nature of Disease		
Resistance in Plants	J. C. Walker, M. A. Stahmann	6:351-66
Adaptation of Plant Pathogen to Host	J. J. Christensen, J. E. DeVay	6:367-92
Obligate Parasitism	C. E. Yarwood C. W. Bennett	7:115-42
Biological Relations of Plant Viruses	C. W. Bennett	7:143-70
Effects of Antibiotics on Plants	P. W. Brian	8:413-26
Physiology of Virus Diseases	F. C. Bawden	10:239-56
Plant Chemotherapy	A. E. Dimond, J. G. Horsfall	10:257-76
Pectic and Cellulolytic Enzymes in		
Plant Disease	R. K. S. Wood	11:299-322
Physiology of Wilt Disease	T. S. Sadasivan	12:449-68
Tumor Inception and Development in		
the Crown Gall Disease	A. C. Braun	13:533-58
Respiration of the Diseased Plant	A. Millerd, K. J. Scott	13:559-74
SPECIAL TOPICS		
Physiology of the Cotton Plant	F. M. Eaton	6:299-328
Recent Advances in Plant Physiology		
in the U.S.S.R.	A. L. Kursanov	7:401-36
The Use of Aquatic Plants in the Study		
of Some Fundamental Problems	W. J. V. Osterhout	8:1-10
Stock and Scion Relations	W. S. Rogers, A. B. Beakbane	8:217-36
The Sugarcane Plant	G. O. Burr, C. E. Hartt	
	H. W. Brodie, T. Tanimoto,	
	H. P. Kortschak, D. Takahashi,	
	F. M. Ashton, R. E. Coleman	8:275-308
Physiological Ecology	W. D. Billings	8:375-92
Physiological Genetics	H. J. Teas	8:393-412
Physiology of the Tobacco Plant	R. A. Steinberg, T. C. Tso	9:151-74
Physiology of the Fresh-water Algae	R. W. Krauss	9:207-44
Plant Physiology and Horticulture	W. H. Chandler	10:1-12
The Pine Tree	N. T. Mirov, R. G. Stanley	10:223-38
Phototropism and Phototaxis	J. Reinert	10:441-58
Physics and Chemistry of Protoplasmic		
Streaming	N. Kamiya	11:323-40
Productivity of the Oceans	E. Steemann Nielsen	11:341-62
Role of Plants in Closed Systems	C. G. Golueke, W. J. Oswald	15:387-408
Interaction of Factors Affecting Yield	H. F. Clements	15:409-42

## INDEX OF CHAPTER TITLES

517

Physiological Aspects of Curing Plant Products Absorption Spectroscopy In Theory and Application

W. G. C. Forsyth

15:443-50

W. L. Butler

15:451-70